



**Request for Proposal
Rescue Pumper
February 18, 2013**

The City of Fargo Fire Department wishes to request proposals for the purchase of one 1250 gallon per minute rescue pumper, for use by the Fire Department. This apparatus shall meet current NFPA 1901 standards.

The Department desires to purchase a unit that is to be constructed from specifications provided by the manufacturer and acceptable to the City of Fargo. It is our intention to let the manufacturer design and construct the unit that best suits their particular manufacturing methods. If there are any discrepancies between the awarded contract and this document as far as what the builder shall be providing this document shall override the awarded contract.

At the end of the apparatus requirements there is an option list for equipment to be purchased with the apparatus, the Fargo Fire Department would like these options bid. The Fargo Fire Department has the option of accepting any or all options with the purchase of the apparatus.

It is the desire of the Fargo Fire Department to have delivery of this apparatus in 250 days from the date of the signed contract. For that reason the builder shall state in their proposal how many days it will take for the delivery of the apparatus. A \$200.00 a day penalty will be assessed each calendar day past the proposed delivery date of the apparatus.

REQUIRED BID BOND

A Bidder's Bond in the amount of 10% shall be furnished with each Bid Proposal, written by a Corporate Surety, payable to the City of Fargo. This Bond is to insure that the Bidder will enter into a contract for the equipment as per the following detailed specifications with NO EXCEPTIONS.

PERFORMANCE BOND

The Successful bidder shall, within 15 days of executing the contract, supply the purchaser with a 100 percent performance bond. The performance bond shall be furnished by the manufacturer of the proposed apparatus. Bonds in the name of any sales agent or representative company shall not be acceptable. Failure to supply said performance bond shall result in forfeiture of the supplied bid bond to the purchaser.

The performance bond (surety bond) shall cover standard one (1) year warranty period only and shall not cover extended warranties offered by the seller or other component manufacturer.

BID WITHDRAWALS

Bids may be withdrawn by certified mail or acknowledged facsimile request from Bidders prior to the time fixed for opening. Negligence on the part of the Bidder in preparing the Bid Proposal confers no right for the withdrawal of the Bid after it has been opened. No Bidder may withdraw their Bid after the time set for the opening thereof.

DETAILED PROPOSAL SPECIFICATIONS

All Bidders shall furnish complete "Proposal Specifications", printed on their own stationery, copies or reproduction of these "advertised specifications" can only be used as an attachment to the proposal specifications, for comparison/ compliance purposes.

All Bid Proposal Specifications must be in the same sequence as these Advertised Specifications for ease of comparison. Any bid not in this sequence will be disregarded and rejected.

LETTER OF EXCEPTIONS

It is the intent of the Fargo Fire Department to receive proposals on equipment/apparatus meeting the attached detailed specifications in their entirety. Any proposals being submitted, without "Full Compliance" with the advertised specifications shall so state on the Bid Proposal Page, followed by a detailed "Letter of Exceptions" listing the areas of non-compliance and equipment or designs being substituted.

DELIVERY AND OPENING OF PROPOSAL

Each proposal and all papers bound and attached thereto, together with the proposal guarantee, shall be placed in an envelope and securely sealed therein. The envelope shall be marked "RFP 2013 Rescue Pumper".

Proposals will be received at or prior to the time set for the opening of bids. Proposals received after the "Bid Opening" will be returned unopened.

All proposals must be received by 2:00 P.M. on Monday, March 18, 2013 at the City Auditor's Office, City of Fargo, 200 3rd St N, Fargo, ND 58103

INSURANCE REQUIREMENTS

Each Bidder must submit with their bid proposal a Certificate of Insurance listing the proposed manufacturer's product liability insurance coverage. Liability insurance shall be a minimum amount of \$6,000,000 million dollars with coverage attained with a minimum of \$1,000,000.00 underlying insurance and \$5,000,000.00 umbrella coverage. Submitted Certificate shall name the apparatus manufacturer, insurance company, policy number, and effective dates of the insurance policy. Bids submitted without the required Certificate, or for Certificates listing less than One (1) million dollars of underlying coverage, plus the Five (5) million dollar umbrella coverage, will be considered non responsive and automatically rejected. No exceptions are allowed to the minimum insurance coverage requirement.

The manufacturer shall maintain full coverage on the purchaser's cab and chassis from time of first possession by the manufacturer until the apparatus is delivered and accepted by the purchaser. No exceptions. Purchaser reserves the right to require proof of insurance from the manufacturer's insurance carrier prior to entering into a contract for the apparatus.

AWARD OF CONTRACT

The contract will be awarded, as soon as possible to the most "Responsible Bidder", provided their proposal is reasonable and it is in the best interest of the Fire Department. The purchaser reserves the right to waive any formality in bids received once such waiver is in the interest of the Purchaser. Also, to accept any item in the proposal, found to be of superior quality or otherwise preferred by the Purchaser.

The competency and responsibility of Bidders along with content of proposal specifications and accuracy/quality of proposal drawing will be considered in making the award. The Purchaser reserves the right to reject any or all proposals when such rejection is in the interest of the Purchaser and to reject the Bid of a Bidder who, in the judgment of the Purchaser, is not in a position to perform the contract. The Purchaser does not, in any way, obligate itself to accept the lowest or any proposal.

The Fire Department reserves the right to reject any or all proposals and purchase the equipment it prefers.

Prior to award, the Fargo Fire Department may elect to meet with, the Bidder Representative purchasing officials (at Purchaser's location) to personally discuss all facets of these specifications to insure a complete and satisfactory understanding of the Purchaser's specifications and the Bidder's proposal.

INSPECTION TRIPS

The City of Fargo Fleet Manager shall be advised as to the date of the following phases of construction: Pre-Construction (prior to bending of metal), Pre-Paint (final design/equipment layout), and Pre-Delivery. Truck Committee members reserve the right to travel to the factory during these stages of construction.

Bidder shall arrange for, and will pay for the travel expenses for three truck committee members, to the above specified "Pre-Construction Conference" and "Pre-Delivery Conference", to be held at the manufacturer's factory, at which time all final designs and equipment mounting locations will be approved. Any changes to original proposal specifications, as approved at the Pre-Construction Conference, shall be noted on a "revised specification", provided by the manufacturer and distributed to Truck Committee members within five working days after Pre-Construction Conference.

GENERAL WARRANTY

The new fire rescue pumper apparatus manufactured per these specifications shall be warranted for a period of ONE (1) year from the date of delivery, except for chassis and other components noted herein.

Under this warranty, Bidder agrees to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service providing that such parts are, at the option of the Bidder, made available for inspection upon request, returned to Bidder's factory or other location designated by Bidder with transportation prepaid within 30 days after the date of failure or within ONE (1) year from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to defective material or workmanship. Accessories/components warranted by their original manufacturer may be subject to reinstallation charges under the terms of their respective warranties, especially if such warranties exceed the above 1-year warranty terms.

The warranty on the chassis and chassis supplied components, storage batteries, generators, electrical lamps and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the chassis manufacturer by the Purchaser.

Refer to the "FIRE PUMP" section and "BOOSTER TANK" section for specific extended Manufacturer's warranties on the provided Fire Pump and Water (Foam) Tank(s).

20-YEAR WARRANTY ON STAINLESS STEEL BODY FABRICATIONS

The fire apparatus manufacturer (body builder) shall warrant to the original purchaser only, that the stainless steel body components as fabricated by the body builder, under normal use and with reasonable maintenance, be structurally sound and shall remain free from corrosion perforation for a period of TWENTY (20) years.

This warranty does not apply to the following items which are covered by a separate warranty: paint finish, hardware, moldings, and other accessories attached to this body.

The body builder shall replace, without charge, repair at the factory, or make a fair allowance for any defect in material or workmanship demonstrated to the satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident.

10-YEAR APPARATUS PAINT WARRANTY

The TEN (10) year paint performance guarantee will cover the areas of the vehicle as are originally finished by the apparatus body builder with the specified product for a period of TEN (10) years beginning the day the vehicle is delivered to the purchaser.

The areas as outlined on the Guarantee Certificate, will be covered for the following paint failures:

GUARANTEE INCLUSIONS:

FULL APPARATUS BODY:

- * Peeling or delaminating of the topcoat and/or other layers of paint.
- * Cracking or checking
- * Loss of gloss caused by cracking, checking, or hazing.
- * Any paint failure caused by defective finishes which are covered by this guarantee.

2-YEAR WARRANTY - ELECTRICAL SYSTEM - 12 VOLT DC

The Apparatus 12-volt DC Electrical System (exclusive of chassis) shall be covered, by the apparatus manufacturer (bidder) under normal use with normal service and maintenance, for a period of two (2) years, of which one (1) year is for Parts & Labor, and two years is for Parts Only. This warranty shall cover: Power Distribution System (PDC) Looms and Harnesses, Multi-Pin Connectors, and Workmanship as provided by the apparatus manufacturer. Individual emergency and non emergency electrical devices, light fixtures, audible equipment, intercoms, and motors shall be covered by the prevailing manufacturer's warranty.

LIFETIME WARRANTY - WATER TANK

The water tank, and its installed accessories, shall be covered by a "Lifetime" Warranty, against cracks, corrosion, or other failures caused by the tanks design and normal use of the same. The warranty shall be between the tank manufacturer, and the customer.

LIFETIME WARRANTY - FOAM TANK

The foam reservoir/tank, and its installed accessories, shall be covered by a "Lifetime" Warranty, against cracks, corrosion, or other failures caused by the tanks design and normal use of the same. The warranty shall be between the tank manufacturer, and the customer.

PUMP WARRANTY

The specified Waterous fire pump and Waterous accessories shall carry a Waterous **five (5) year warranty** covering defective parts only.

PUMP PLUMBING WARRANTY

The stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of ten (10) years. This covers structural failures caused by defective design or workmanship, or perforation caused by internal or external

corrosion, provided the apparatus pumping system is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten (10) years from the date of delivery.

CHASSIS TO BE FURNISHED: CUSTOM-BUILT CAB & CHASSIS

The specified chassis is to be a custom-built "tilt style" cab and chassis, specially designed and manufactured, for use as a Fire Apparatus, and shall be provided by the apparatus body builder (Bidder). The price of the custom chassis shall be included in the total Bid Proposal Package Price.

MODEL

The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2013 model year.

COUNTRY OF SERVICE

The chassis shall be put in service in the country of United States of America (USA). The chassis will meet applicable U.S.A. federal motor vehicle safety standards.

APPARATUS TYPE

The apparatus shall be a rescue pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 1250 gallons per minute. The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

AXLE CONFIGURATION

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 20,000 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 31,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

CAB STYLE

The cab shall be a custom, fully enclosed, with a 20.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer six (6) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.

The exterior width of the cab shall be a maximum of 96.00 inches wide with a minimum interior width of 86.00 inches. The cab shall have a minimum of 54.00 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The cab shall also include a crew area with two (2) cab doors, also large enough for personnel in full firefighting gear.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

CAB FRONT FASCIA

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

CAB UNDERCOAT

There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

CAB SIDE DRIP RAIL

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

CAB PAINT EXTERIOR

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be prepped to the paint manufactures guidelines prior to painting.

The cab shall then be painted to match existing Fargo Fire Department apparatus with a minimum thickness of 2.00 mils of paint, followed by a clear top coat not to exceed 2.00 mils.

CAB PAINT WARRANTY

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase.

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish or equivalent

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CAB ENTRY DOORS

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

CAB STRUCTURAL WARRANTY

The cab structure shall be warranted for a period of ten (10) years. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

CAB TEST INFORMATION

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

POWER & GROUND STUD

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud.

AUXILIARY POWER & GROUND STUD

The auxiliary set of power and ground studs shall be provided and installed in the center console of the cab where the emergency lighting switches are located. The studs shall be capable of carrying up to a 60 amp battery direct load. An additional 4.00 feet of wire shall accompany the option.

ENGINE

The chassis engine shall be a Cummins ISL9 engine. The ISL9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liter) of displacement.

ENGINE PROGRAMMING HIGH IDLE SPEED

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with a high-idle speed control rocker switch, which shall be pre-set to maintain the engine idle at a pre-determined rate when activated manually. This device shall operate when the master switch is activated and safely interlocked only to function when the transmission is in neutral with the parking brake set.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

The engine shall include programming which will govern the top speed of the vehicle.

AUXILIARY ENGINE BRAKE

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs.

AUXILIARY ENGINE BRAKE CONTROL

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled through an on/off switch and a low/medium/high selector switch.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

FLUID FILLS

The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. It would be preferred to be able to manually check the engine oil and coolant levels without having to raise the cab.

ENGINE DRAIN PLUG

The engine shall include an original equipment manufacturers' magnetic oil drain plug installed.

ENGINE WARRANTY

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine shall be supplied with the chassis. . Separate circuits shall also be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indicator light.

ENGINE COOLING SYSTEM

There shall be a heavy-duty cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements.

The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant.

ENGINE COOLING SYSTEM PROTECTION

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris.

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

ENGINE COOLANT FILTER

An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance.

ELECTRONIC COOLANT LEVEL INDICATOR

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

ENGINE PUMP HEAT EXCHANGER

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

COOLANT HOSES

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include blue stripe silicone hose with stainless steel constant torque band clamps.

ENGINE COOLANT OVERFLOW BOTTLE

A remote engine coolant overflow bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overfill rather than allow the fluid to drain on the ground. The overflow bottle provided on the cooling system shall only be a catch bottle and shall not return excess coolant back into the surge tank.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the right hand side fascia. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The engine shall also include an air intake filter which shall be bolted to the frame. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

ENGINE EXHAUST SYSTEM

The exhaust system shall meet current EPA standards.

ENGINE EXHAUST ACCESSORIES

The exhaust system shall be modified to accept a Nederman 45-degree exhaust extraction system to match what the Fargo Fire Department uses.

ENGINE EXHAUST WRAP

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

TRANSMISSION

The drive train shall include an Allison Gen IV-E model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

The EVS group package number 127 shall contain the 198 vocational package in consideration of the duty of this apparatus as a pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

TRANSMISSION COOLING SYSTEM

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

TRANSMISSION DRAIN PLUG

The transmission shall include an original equipment manufacturer installed oil drain plug.

TRANSMISSION WARRANTY

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

MIDSHIP PUMP / GEARBOX MODEL

The midship pump/gearbox provisions shall be for a Waterous gearbox.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be black textile braided lines which are reinforced with braided high tensile steel wire. The fuel lines shall be connected with reusable steel fittings.

FUEL COOLER

Aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located behind the rear axle.

FUEL TANK

The fuel tank shall have a capacity a minimum of fifty (50) gallons.

The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill port for driver's side fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a conventional style hub with a standard knuckle.

FRONT WHEEL BEARING LUBRICATION

The front axle wheel bearings shall be lubricated with synthetic oil. The oil level can be visually checked via clear inspection windows in the front axle hubs. The hubs shall include Stemco ESP plugs.

FRONT SHOCK ABSORBERS

Two (2) inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system.

FRONT SUSPENSION

The spring capacity shall be rated at 21,500 pounds.

STEERING COLUMN/ WHEEL

The cab shall include a steering column which shall include tilt and telescopic adjustment. The steering wheel shall be covered with black polyurethane foam padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

POWER STEERING PUMP

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

FRONT AXLE CRAMP ANGLE

The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.

REAR AXLE

The rear axle shall be a Meritor model RS-30-185 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 33,000 pounds.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

VEHICLE TOP SPEED

The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.

REAR SUSPENSION

The single rear axle shall feature a Ridewell RAD241 or equivalent air suspension with a single optimized air spring mounted to a fabricated load beam trailing arm on each side with a single fixed transverse torque rod. Axle alignment is maintained using eccentric bolts at each frame bracket. Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load.

The rear suspension capacity shall be rated at 32,500 pounds.

REAR SHOCK ABSORBERS

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

FRONT TIRE

The front tires shall be Michelin tubeless radial XZA highway tread.

REAR TIRE

The rear tires shall be Michelin tubeless radial XDN2 Grip all weather tread.

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50 inch X 10.50 inch polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and a polished finish that lasts.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch aluminum wheels. Each outer wheel shall have a polished aluminum finish on the exterior surface and each inner wheel shall have a machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

WHEEL TRIM

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system.

A four (4) sensor, four (4) modulator Anti-lock Braking System (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle.

Additional handling capabilities shall include Roll Stability Control (RSC) which shall monitor the vehicles rollover threshold based on the roll and yaw. The RSC capability shall be based on operating weight, rather than capacity and shall be a minimum of 17,000 pounds.

A momentary rocker style switch shall be provided and properly labeled "mud/snow".

FRONT BRAKES

The front brakes shall be Meritor 16.50 inch x 6.00 inch S-cam drum type.

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type. The brakes shall feature a cast iron shoe.

PARK BRAKE

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the left hand dash to the right of the steering column within easy reach of the driver.

FRONT BRAKE SLACK ADJUSTERS

The front brakes shall include Meritor automatic slack adjusters installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

REAR BRAKE SLACK ADJUSTERS

Hallex rear brake automatic slack adjusters shall be installed on the axle.

AIR DRYER

The brake system shall include a Bendix AD-9 fully self contained air dryer which shall not require an extra purge tank or additional valves. The AD-9 system shall include a spin-off desiccant filter with a 12-volt, 75-watt thermostatically controlled heating element.

AIR COMPRESSOR

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed.

MOISTURE EJECTORS

Manual cable actuated drain valves shall be installed on all reservoirs of the air supply system. The actuation pull cables shall be coiled and tied at each drain valve. The supplied cables shall be extended and be sufficient in length to allow each drain to be activated from the side of the apparatus.

AIR SUPPLY LINES

The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

AIR INLET CONNECTION

An air connection for the shoreline air inlet shall be supplied. The air inlet shall be installed in the left hand side lower front step in the forward position. The air inlet connector shall be plumbed to the air system with a check valve to prevent air from escaping through the inlet connector.

FRAME

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

FRAME PAINT

The frame shall be powder coated black prior to any attachment of components.

FRONT BUMPER

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended ahead of the cab in order to allow the Fargo Fire Department to carry extrication equipment in the front bumper.

AIR HORN

The chassis shall include two (2) Grover brand air horns which shall measure 24.50 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper fascia between the frame rails in the right and left outboard positions.

AIR HORN RESERVOIR

One (1) air reservoir, with a 1200 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns.

ELECTRONIC SIREN SPEAKER

The bumper shall include one (1) Cast Products Inc. model SA4301, 100 watt speaker which shall be recess mounted within the bumper fascia. The speaker shall measure 6.20 inches tall X 7.36 inches wide X 3.06 inches deep. The speaker shall include a flat mounting flange which shall be polished aluminum.

ELECTRONIC SIREN SPEAKER LOCATION

The electronic siren speaker shall be located on the front bumper face in the center position between the frame rails.

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the chassis frame, shall be installed below the front bumper, forward position and bolted directly to the outside of each chassis frame rail with grade 8 bolts.

CAB TILT SYSTEM

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

CAB TILT AUXILIARY PUMP

A manual cab tilt pump module shall be attached to the cab tilt pump housing.

CAB TILT CONTROL RECEPTACLE

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

CAB WINDSHIELD

The cab windshield shall be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self locking window rubber.

GLASS FRONT DOOR

The front cab doors windows shall have the capability to roll down completely into the door housing. This shall be accomplished manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

GLASS REAR DOORS

The rear door windows shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

GLASS SIDE MID RH

The cab shall include windows on the side behind the front and ahead of the crew doors. These windows shall be fixed within this space and shall be rectangular in shape.

GLASS UPPER SIDE FRONT

The raised roof on the left and right sides of the cab shall include a triangular shaped window which shall be 14.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted to the cab using black self-locking window rubber.

GLASS TINT UPPER SIDE FRONT

The windows located in the upper section on the left and right side towards the front of the cab shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS UPPER SIDE MID

The middle section of the raised roof on the left and right sides of the cab shall include a window which shall measure 16.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted using black self-locking window rubber.

GLASS UPPER SIDE REAR DOOR

Windows shall be provided in the upper portion of each rear door of the raised roof cab. Each window shall measure 27.00 inches wide X 14.00 inches high and be installed above the lower door window. The windows shall be rectangular in shape and fixed within this space. The windows shall be mounted using black self-locking window rubber.

CLIMATE CONTROL

The cab shall have an engineered heating and air conditioning system capable of keeping all windows clear of frost and maintaining a temperature of 70 degrees F. at ambient temperatures of -30 degrees F. to +100 degrees F.

A temperature control valve and two (2) blowers offering three (3) speeds shall be installed in the cab. The temperature and blower controls shall be located on the heater/air conditioning unit. One blower should be facing the front of the cab and one blower should face the rear of the cab.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bend zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-quip EZ clip fittings.

CLIMATE CONTROL DRAIN

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

CLIMATE CONTROL ACTIVATION

The heating and defrosting controls shall be located on the front climate control unit. There shall be additional heating and air conditioning controls located on the engine tunnel mounted climate control unit.

AUXILIARY CLIMATE CONTROL REAR CREW

One (1) 53,500 BTU heater shall be provided and installed in the rear section of the crew cab under the center rear facing seat riser. The fan controls shall be located on the heater unit.

The auxiliary heater system hoses shall be silicone with stainless steel constant torque clamps approved for use with silicone hose. The auxiliary heater system shall include one (1) seasonal shut-off valve. The valve shall be supplied at the front of the right hand corner of the cab. The cab must be tilted to access the shut-off valve.

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

CAB INSULATION

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

UNDER CAB INSULATION

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

INTERIOR TRIM FLOOR

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

REAR WALL INTERIOR TRIM

The rear wall of the cab shall be trimmed with vinyl.

HEADER TRIM

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation. The dash shall include cup holders and storage bins.

TRIM LH DASH

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection the extreme duty left hand dash utilizes patent pending break away technology to reduce rigidity in the event of a frontal crash. The left hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

TRIM RH DASH

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

ENGINE TUNNEL TRIM

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

ENGINE TUNNEL TRAY

There shall be a tray built the same size as the top of the engine tunnel with a one (1) inch lip all the way around the tray. This tray shall be sprayed with Linex or equivalent. The tray shall be mounted to the top of the engine tunnel with a one (1) inch between the tray and the top of the engine tunnel. This is to allow wiring to be run under the tray and not drill holes through the engine tunnel

POWER POINT DASH MOUNT

The cab shall include three (3) 12 volt cigarette lighter type receptacles in the cab dash to provide a power source for 12 volt electrical equipment. The receptacles shall be wired battery direct.

AUXILIARY POWER POINT COMPARTMENTS

The cab interior shall include one (1) 12 volt cigarette lighter type receptacle located in the glove compartment within the right side dash. This receptacle shall provide a power source for 12 volt electrical equipment.

STEP TRIM

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have an opening on the outer edge to allow debris and water to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed with a Flex-Tred® adhesive grit surface material.

UNDER CAB ACCESS DOOR

The cab shall include an access door in the left crew step riser constructed of DA finish aluminum with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

INTERIOR DOOR TRIM

The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch thick aluminum plate. The door panels shall include a painted finish.

DOOR TRIM KICKPLATE

The inner door panels shall include an aluminum tread kick plate which shall be fastened to the lower portion of the door panels.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes. The chevron tape shall measure 6.00 inches in height.

INTERIOR TRIM VINYL COLOR

The cab interior vinyl trim surfaces shall be gray in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with Zolatone #20-72 silver gray texture finish or equivalent.

HEADER TRIM INTERIOR PAINT

The metal surfaces in the header area shall be coated with Zolatone #20-72 silver gray texture finish or equivalent.

TRIM CENTER DASH INTERIOR PAINT

The entire center dash shall be coated with Zolatone #20-72 silver gray texture finish or equivalent. Any accessory pods attached to the dash shall also be painted this color.

TRIM LH DASH INTERIOR PAINT

The left hand dash shall be painted with a Zolatone #20-72 silver gray texture finish or equivalent.

TRIM RIGHT HAND DASH INTERIOR PAINT

The right hand dash shall be painted with Zolatone #20-72 silver gray texture finish or equivalent.

INTERIOR TRIM SUNVISOR

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be covered with padded vinyl trim.

SWITCHES CENTER PANEL

The center dash panel shall include eighteen (18) rocker switch positions in a twelve (12) over six (6) configuration in the left portion of the panel.

SWITCHES LEFT PANEL

The left dash panel shall include eight (8) switches. There shall be six (6) switches across the top of the panel and two (2) staggered on the left hand portion of the panel. Five (5) of the top row of switches shall be rocker type and the left one (1) shall be the headlight switch. The remaining switches shall consist of one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer switch.

SEAT BELT WARNING

A Class One seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate an indicator light in the instrument panel, a digital seat position indicator with a seat position legend in the switch panel, and an audible alarm.

SEAT MATERIAL

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

SEAT COLOR

All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom Sierra model seat with air suspension. The four-way seat shall feature 3.00 inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

SEAT BACK DRIVER

The driver's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable tilting seat back. The seat back shall also feature a contoured head rest.

SEAT OFFICER

The officer's seat shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly.

The officer's seat shall feature a SecureAll™ SCBA locking system which shall be one bracket model and store SCBA while in transit or for storage within the seat back. The bracket shall be easily adjustable with all adjustment points using similar hardware and adjustments with one tool.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

SEAT REAR FACING OUTER LOCATION

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the left side front seat and one (1) located directly behind the right side front seat.

SEAT CREW REAR FACING OUTER

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly.

The rear facing outboard seat shall feature a Bostrom SecureAll™ SCBA locking system which shall store a SCBA while in transit or for storage within the seat back. The bracket shall be easily adjustable at all adjustment points with one tool.

The SecureAll™ shall include a release handle which shall be integrated into the center of the bottom seat cushion for easy access and to eliminate hooking the release handle with clothing or other equipment.

SEAT MOUNTING REAR FACING OUTER

The rear facing outer seats shall offer special mounting positions which shall be 2.00 inches towards the rear wall offering additional space between the front seats and the outer rear facing seats.

SEAT BELT ORIENTATION CREW

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

SEAT FORWARD FACING OUTER LOCATION JUMP

The crew area shall include two (2) forward facing self folding crew seats, which include one (1) located outward on the left side rear wall and one (1) located outward on the right side rear wall. These seats shall be non SCBA seats with three point seat belts. These seats shall fold out of the way when not in use.

MDT SLIDE MOUNT

There shall be a Mobile data terminal mounting system installed. The MDT shall be accessible from the officer's seat while the officer is belted into his SCBA and seat belt. The MDT mount can be on slides or swivel but shall not hinder getting in or out of the apparatus.

CAB FRONT UNDERSEAT STORAGE ACCESS

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

SEAT COMPARTMENT DOOR FINISH

All under seat storage compartment access doors shall have a Zolatone #20-72 silver gray texture.

WINDSHIELD WIPER SYSTEM

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

The windshield washer fluid level shall be monitored electronically.

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of a fiber reinforced plastic composite with a black matt finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

REARVIEW MIRRORS

West Coast style single vision mirror heads shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an 8.00 inch convex mirrors with a stainless steel back, installed below the flat glass to provide a wider field of vision. The flat mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The convex mirrors shall be manually adjustable. The flat mirror glass shall be heated for defrosting in severe cold weather conditions.

The mirrors shall be constructed of a vacuum formed chrome plated ABS plastic housing that is corrosion resistant and shall include the finest quality non-glare glass.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a rocker switch on the dash in the switch panel.

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of 14 gauge 304 polished stainless steel.

MUD FLAPS FRONT

The front wheel wells shall have mud flaps installed on them.

IGNITION

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a ¼ turn switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the “ON” position.

The starter button shall only operate when both the master battery and ignition switches are in the “ON” position.

BATTERY

The single start electrical system shall include six (6) 950 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

BATTERY TRAY

The batteries shall be installed within two (2) steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air

flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

BATTERY BOX COVER

Each battery box shall include a steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

ALTERNATOR

The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

BATTERY CONDITIONER

A Kussmaul 1200 Pump Plus battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab behind the driver's seat.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

AUXILIARY AIR COMPRESSOR

A Kussmaul Pump 12V air compressor shall be supplied. The air compressor shall be installed behind the driver's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

ELECTRICAL INLET

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed. The electrical inlet shall be yellow in color and installed on the left hand side of the cab ahead of the front door.

HEADLIGHTS

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels.

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch halogen amber arrow shaped turn signals which shall be installed outboard of the warning lights. The turn signal light heads shall be mounted in chrome plastic bezels and shall be located above the headlamps.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released.

GROUND LIGHTS

Each door shall include an LED NFPA compliant ground light mounted to the underside of the cab step below each door. The ground lighting shall be activated by the opening of the respective door as well as being activated when the parking brake is set.

STEP LIGHTS

The middle step located at each door shall include a 4.00 inch round light which shall activate with the opening of the respective door.

ENGINE COMPARTMENT LIGHT

There shall be an incandescent NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

FRONT SCENE LIGHTS

The front of the cab shall include one (1) Fire Research Optimum model OPA800-H15 contour roof mount scene light installed in the center on the brow of the cab.

The lamp head shall have one (1) High Intensity Discharge (HID) 12 volt 150 watt bulb. The lamp head and brackets shall be powder coated white.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by a rocker switch located on the main switch panel.

INTERIOR OVERHEAD LIGHTS

The cab shall include a two-section dome lamp with a red and clear lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and both the red and clear portions can be activated by individual switches on each lamp.

An additional incandescent three (3) light module with dual map lights shall be located over the engine tunnel which can be activated by individual switches on the lamp.

AUXILIARY DOME LIGHT MID CREW

The cab shall include two (2) 7.00 inch auxiliary dome lights on the headliner in the middle of the crew area near the center. One (1) light shall include a clear lens and one (1) light shall include a red lens. The clear light shall be on the right and the red light shall be on the left. The clear light shall be activated by the rear doors as well as an individual switch located on the side of the light. The red light shall be activated with a switch on the light only.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The light and alarm shall be interlocked for activation when either a cab door is not firmly closed or an apparatus compartment door is not closed, and the parking brake is released.

MASTER WARNING SWITCH

A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up when the master switch is activated.

HEADLIGHT FLASHER

An alternating high beam headlight flashing system shall be installed into the high beam headlight circuit which shall allow the high beams to flash alternately from left to right.

The flashing headlights shall be activated through a rocker switch on the switch panel. The rocker switch shall be clearly labeled for identification.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) red Whelen 600 series Super LED front warning lights in the left and right inboard positions. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

The front warning lights shall be controlled via rocker switch on the panel. This switch shall be clearly labeled for identification.

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) red Whelen 600 series Super LED intersection warning lights, one (1) each side. The intersection lights shall be mounted on the side of the bumper.

The side and intersector warning lights shall be controlled by a rocker switch on the switch panel. This switch shall be clearly labeled for identification.

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) red 4.00 inch diameter Truck-Lite LED warning light. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

Each door shall also include one (1) clear 4.00 inch diameter Truck-Lite halogen light. Each light shall be activated when the door is in the open position.

SIREN CONTROL HEAD

A Whelen 295HFSA7 electronic siren control head with remote dual amplifier shall be provided and flush mounted in the switch panel with a location specific to the customer's needs. The siren shall feature 200-watt output, radio broadcast, public address, wail, yelp, or piercer tones and hands free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

HORN BUTTON SELECTOR SWITCH

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button.

AIR HORN ACTIVATION

The air horn activation shall be accomplished by the steering wheel horn button for the driver and a right hand side Linemaster model SP491-S81 foot switch for the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

BACK-UP ALARM

A backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included.

One (1) electronic tachometer shall be included.

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter,

The instrument panel shall include a light bar that will contain the following LED indicator lights:

BACKLIGHTING COLOR

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

HOURLY METER

Within the instrument panel, an hour meter shall be installed which shall measure the amount of hours the engine has been operated. The hour meter shall be able to be read with the power off to the truck.

BACKUP CAMERA AND MONITOR

There shall be a backup camera installed on the rear of the apparatus to allow the driver to see the rear of the apparatus while backing up. There shall be a monitor attached to the backup camera and it shall be installed in close proximity to the driver in order to allow them the ability to see what is directly behind them. A flip up monitor would be preferred.

DOOR KEYS

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

OPERATION MANUAL

There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

ENGINE AND TRANSMISSION OPERATION MANUALS

There shall be one (1) printed hard copy set of the engine operation manual and one (1) printed hard copy set of the transmission operation manual specific to the model ordered included with the chassis in the ship loose items.

ENGINE SERVICE MANUALS

There shall be one (1) printed hard copy set of Cummins ISC/ISL engine service reference manuals which shall be provided with the chassis.

TRANSMISSION SERVICE MANUALS

There shall be one (1) printed hard copy set of Allison 3000 transmission service manuals included with the chassis.

AS BUILT WIRING DIAGRAMS

The cab and chassis shall include one (1) digital copy of wiring schematics and option wiring diagrams.

FLUID DATA LABEL

A permanent data label shall be affixed in the driver's compartment specifying quantity and type of the following fluids used in the vehicle.

1. Engine Oil
2. Engine Coolant
3. Chassis Transmission Fluid
4. Pump Transmission Lubrication Fluid
5. Pump Primer Fluid
6. Drive Axle Lubrication Fluid
7. Air Conditioning Refrigerant
8. Air Conditioning lubrication oil
9. Power Steering Fluid
10. Cab Tilt Mechanism Fluid
11. Transfer Case Fluid
12. Air Compressor System Lubricant
13. Generator System Lubricant
14. Front Tire Cold Pressure
15. Rear Tire Cold Pressure
16. Equipment Rack Fluid

OVERALL HEIGHT/WIDTH/LENGTH/WEIGHT DATA PLATE

There shall be a high-visibility placard located in direct view of the seated Driver, which shall indicate, in feet-and-inches; the overall height of the vehicle (to the highest permanent point-except antennas), the overall width (at steps, fenders, and rub rails-not retractable mirrors), and overall length of vehicle (bumper to tailboard). The data plate shall also indicate, in pounds, the vehicle's total "as delivered" weight.

BUMPER EXTENSION GRAVELSHIELD, POLISHED ALUMINUM TREADPLATE

The area between the specified extended front bumper and the front of the chassis cab shall be provided with a flat panel gravel shield, fabricated of polished 4-way aluminum treadplate with NFPA approved slip resistant pattern. The gravel shield shall custom fit the profile of the curved wrap-around bumper, outboard radius cab corners, and the cab/grille with accommodations for cab hinge points. Driver and passenger outboard sides of the gravel shield shall be equipped with "boxed" vertical end panels, extending from tails of bumper, wrapping inboard to the cab sides. Underside of gravel shield shall be properly reinforced to accommodate the specified gravel shield mounted optional accessories.

BUMPER EXTRICATION TOOL & HOSE REEL COMPARTMENT

Front bumper shall be equipped with full width fully enclosed rescue tool and reel compartment, designed to accommodate: interior outboard mounting of two (2) round disc hydraulic hose reels and two (2) pre-connected rescue tools beneath a closed full width lid/cover (reels and/or rescue tools to be optionally specified as follows).

A full width fabricated aluminum treadbrite rescue tool/reel compartment lift-up lid shall be furnished, with: rearward lid mounted stainless steel piano hinge, dual interior/under lid air cylinder lift assist props, two (2) stretch-rubber or spring-loaded bright metal claw latches, and two (2) exterior chrome grab handles appropriately placed at front outboard corners. An interior under-lid perimeter riser flange shall be provided, integral with gravel shield, designed to prevent water and road debris from entering the transverse compartment with the lid closed.

The closed lid shall rise no more than 6" above the gravel shield top surface, and the lid shall be designed with angled outboard vertical corners and forward sloped, full width back panel, configured to accommodate the hydraulic hose reel profile. Lid's rear full width slope shall also allow for full-tilting of the chassis cab with the lid closed and secured.

Underside perimeter of the compartment lid shall be lined with a neoprene weatherproof seal.

NOTE: Open lid shall activate the vehicle's "DO NOT MOVE VEHICLE" warning system (same as an open compartment door).

UNDER-LID LIGHTING, LED LIGHTSTRIPS

Two (2) each, 12-volt LED bumper compartment underside lid mounted "strip" lights, shall be furnished. Light strips are to be positioned and angled to illuminate the entire rescue tool compartment with the lid in the fully opened position. Light sticks shall have polycarbonate lens to resist breakage from impact and damage from light element heat. Light fixtures are to be activated by setting of the park brake with running lights on.

HANNAY RESCUE TOOL HOSE REEL(S) TO ACCOMMODATE DUAL 1/4" HOSE

Two (2) each Hannay model EF2016-17-18 or equivalent, 12-volt electric chain and sprocket rewind "live-pressure" rescue tool hydraulic hose reel(s) shall be furnished, painted with oven-cured enamel standard silver metallic color. Hose reel(s) shall be equipped with dual 90-degree swivel inlets and dual fluid paths, adjustable spring-drag brake, a loom protected insulated multi stranded copper 12-volt battery cable power feed, and a placarded weatherproof push-button rewind switch located within easy reach of the operator while standing on the ground adjacent to the bumper.

HYDRAULIC SUPPLY HOSES (ONLY)

Each hose reel shall be equipped with two (2) continuous rotating style hydraulic fluid inlet fittings, and two (2) hydraulic power unit pressure compatible fluid supply hoses. Supply hoses shall extend from reel inlet swivel fittings to the hydraulic power source, and shall be equipped with permanent style threaded connector fittings, both at reel and at hydraulic fluid power source. NOTE: see following specifications for applicable reel mounted fluid hoses.

HOSE ROLLERS

Each rescue tool hose reel shall be equipped with a "captive" 4-way hose roller assembly, angled 45-degrees upwards and facing forward, for ease of air hose deployment and rewinding.

RATING PLACARD

Per NFPA-1901, a permanent hose & hose reel rating specification placard shall be installed adjacent to each hydraulic reel.

HYDRAULIC RESCUE TOOL HIGH PRESSURE SUPPLY HOSE, 100 FT. SECTIONS

Two (2) each, 100' sections of 1/4" inside diameter 10,000 PSI working pressure twin line rescue tool hydraulic supply hose to be furnished, equipped with quick disconnect couplings. Hose assemblies shall be compatible with the purchaser's high-pressure rescue tools.

HYDRAULIC HOSE QUICK-COUPERS, BRAND SPECIFIC

The specified Hydraulic Rescue Tool Hose Reel hose to be equipped with Hurst brand Quick-Couplers on the hose ends.

SOURCE OF POWER FOR HYDRAULIC HOSE REEL(S)

The truck builder shall build into the body design a location for the Hurst hydraulic pump as specified in the equipment options part of this proposal. The above specified rescue tool hydraulic hose reel(s) shall be plumbed to this location so they can be hooked to the Hurst hydraulic pump.

START SWITCH, FOR HYDRAULIC POWER SUPPLY

A single remote start switch is to be furnished, to activate power to the on-board line voltage hydraulic rescue tool power source. Switch is to be mounted inside the bumper extension rescue tool compartment accessible through open compartment door. Switch to be labeled with permanently engraved nameplate identifying function.

125-VOLT RECEPTACLE(S)

One (1) each 125-volt 3-wire household weatherproof plug-in receptacle to be furnished, mounted inside the bumper extension rescue tool compartment, accessible through open compartment door. Receptacle to include: metal cover plate, cast aluminum electrical receptacle box, screw type conduit connector, and flexible non-metallic electrical conduit with appropriate size multi-stranded THHN insulated copper wiring extending from receptacle to specified generator circuit breaker panel. Receptacle to be provided with individual manual reset circuit breaker. Receptacle outlet to be labeled with permanently engraved nameplate identifying voltage.

EXHAUST OUTLET PASSENGER SIDE

The original chassis engine exhaust system, upstream of the outlet, shall NOT be modified, so as to remain in compliance with 2010 exhaust emission standards. System shall be designed and installed to prevent component interference with the specified fire pump installation and compartment floors/runningboards. Fabricated steel or aluminum heat deflector plates shall be provided where necessary to protect these same components from excessive radiant heat. Exhaust outlet shall terminate below body compartment floor ahead of rear wheels on passenger side of vehicle to be compatible with the Fargo Fire Departments Nederman system.

FUEL FILL DOOR & VENTED FILL PIPE, DRIVER SIDE

A Cast Products or equivalent brushed or polished aluminum leading edge vertically hinged fuel fill door shall be furnished, bolted in position, located driver side apparatus body rear wheelwell. "LOW SULFUR DIESEL FUEL ONLY" green (color) nametag to be furnished, on the interior door.

A minimum 2" threaded brass vented fuel fill cap shall be furnished, located inside fuel fill door, piped to the underbody diesel fuel tank with: minimum 1-1/2" i.d. reinforced non-collapsible fuel fill hose and .75" tubing air vent extending from top of underbody fuel tank to top of fuel fill neck.

The tank shall exceed FHWA 393.67 requirements, including 96% fill capacity of tank's total volume.

SCUFF PROTECTION BELOW FUEL FILL DOOR

The area immediately below the fuel fill door shall be provided with a mirror finish polished stainless steel scuff plate. Scuff plate shall be of a size and located to prevent paint damage caused by contact with the fueling nozzle. Scuff plate is to be installed with adhesive (no screws), perimeter edges seal caulked.

REMOVABLE PANEL ACCESS TO FUEL TANK

A removable body panel shall be provided, in forward wall of the specified rear apparatus body compartment. Removal of the panel shall allow unobstructed access to the diesel fuel tank's level sending unit, and stand-pipe engine feed line. Not applicable to rear mounted pump systems.

GATED COOLANT LINES: AUXILIARY HEATER(S)

Engine cooling system chassis cab heater return-to-engine line shall be separated and equipped with a 1/2" i.d. bronze NRS screw type gate valve and 5/8" i.d. neoprene rubber heater hose extending to specified auxiliary heater(s). An additional 1/2" bronze NRS gate valve is to be provided on the auxiliary heater(s)-to-engine return line. Gate valves shall allow complete shut-off of the chassis cab and remote auxiliary heating system(s) that are downstream of the chassis cab heater. Gate valves shall prevent hot water circulation during warm weather periods, and allow shut-down should a hose or heater core leak develop.

COOLANT "BOOST" PUMP

The specified pump compartment heater core shall be piped to the engine coolant system, installation to include: 12-volt in-line Groco "free-flow" centrifugal cast bronze bodied coolant "boost" pump, parallel run of high grade coolant hoses with stainless steel screw type hose clamps, and chassis cab mounted rocker switch control with engraved nameplate to read: "COOLANT PUMP", accessible to driver. Installation of coolant pump shall provide increased rate of coolant flow to assure maximum available chassis cab and auxiliary heater core temperatures during extreme winter conditions.

TIRE PRESSURE WARNING DEVICE, LED CAPS FOR 6 TIRES

There shall be a VECSAFE LED, tire alert pressure management system provided that shall monitor each tire's pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire for a total of six (6) tires. The sensor shall activate an integral battery operated LED when the pressure of a tire drops 8 psi, from the nominal pressure when the cap was installed. Removing the cap from the sensor shall

indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start blinking.

TIRE VALVE CORE EXTENSIONS

Two (2) each "rigid" metal valve core threaded extensions shall be provided, installed on the inside dual rear tires of the vehicle's rear axle. Inside dual wheels shall be positioned so that the valve core extensions protrude through the outside dual wheels, located directly across from the outside dual wheel's valve core.

MUDFLAPS

Driver's side and passenger's side rear body wheel well mud flaps shall be furnished made of fabric reinforced neoprene rubber, bolted to the rear wheel well bulkheads using stainless steel strap brackets and bolts. Mud flaps shall extend approximately 10" below running board level.

CAB CEILING MAP LIGHTS

Two (2), each 12-volt interior rear cab ceiling mounted map/dome lights to be furnished, located overhead the outboard forward facing rear seated positions. Lights to be equipped with fixture mounted switches and CLEAR lens. Lights shall also be activated by opening of either one of the rear cab doors.

MASTER BATTERY SWITCH

A two-position battery "cut-off" switch, with green "battery-on" pilot light shall be furnished, as specified in CHASSIS SECTION, mounted to be easily accessible and visible to seated driver, and from exterior ground level (through open driver's door).

2-CHASSIS CAB INTERIOR - 125-VOLT POWER STRIPS, SHOREPOWER

Two (2), 125-volt, household 15-amp 3-wire 4-place plug-in power strips, with 5-15 receptacles shall be furnished, interior of chassis cab, each strip located as designated, equipped with protected line voltage wiring to the specified shoreline, and engraved nameplates identifying voltage and power source. The above specified "chassis cab" line voltage power strips shall be located in the EMS cabinet in the rear of the crew cab.

CREW CAB INTERIOR - 125-VOLT 5-20R RECEPTACLE, SHOREPOWER

One (1), 125-volt, household 20-amp 3-wire duplex (2-total) plug-in receptacle shall be furnished, interior of crew cab, located as designated, with: surface mounted cast aluminum receptacle box, 125-volt 3-wire 5-20R household plug-in receptacle, metal cover plate, protected wiring to the specified shoreline, and engraved nameplate identifying voltage and power source.

The above specified "Crew Cab" line voltage receptacle shall be located on the exterior wall behind the driver's seat above the maintainer.

RADIO ANTENNA MOUNT

One (1) antenna mounting base, Model MATM, with at least 17 feet of coax cable and weatherproof cap are to be provided, for use with Customer's radio installation. Mount to be located on exterior cab roof, coax cable to be routed to the interior driver's compartment.

10-PLACE "HOT" CIRCUIT PANEL: CUSTOMER'S RADIOS/COMPUTERS/PHONES

A continuously "HOT" breaker panel, with 10 each 12-volt power positions and individual vehicle grounds shall be provided, inside the chassis cab, for use with Customer's installed radios, cell phones, computers, and other 12-volt powered accessories.

10-PLACE IGNITION POWERED CIRCUIT PANEL: CUSTOMER'S ACCESORIES

A vehicle Ignition Switch-ON powered breaker panel, with 10 each 12-volt power positions and individual vehicle grounds shall be provided, inside the chassis cab, for use with Customer's installed 12-volt powered accessories

SIGTRONICS INTERCOM SYSTEM

A Sigtronics model US-67D intercom system to be furnished and installed, capable of interfacing with two (2) 2-way radio systems as furnished by the Customer. Installation to include: Dual Radio Intercom Station, six (6) SE-8 Headsets with behind-the-head dual ear coiled cord, Flex Boom with ultra foam wind screen, and Mobile Radio Adapter.

Intercom installation to include: wiring and mounting of all intercom plug-in receptacles, mounting of headset hanger brackets (at each seated position), and appropriate interfacing for the Customer's mobile 2-way radios. Locations of components shall be determined at Pre-Build.

CHASSIS CAB REARWARD EXTENSION/AUGMENTATION

The specified medium 4-door "custom" chassis cab shall be modified as follows:

The upper back wall of the chassis cab shall be extended rearward to allow for recessed mounting of the specified interior rear cab forward facing crew seats. The rearward cab extension design is to be in keeping with the original equipment manufacturers (OEM's) cab roof top profile, including matching horizontal outboard roof cap radius extrusions. All rearward cab extension fabrications shall be of the same type of aluminum, but of heavier material thickness than the OEM materials.

Aluminum construction materials and shall include: .187" horizontal roof plate and vertical rear and side panels. The seats mounting platform, shall be of .375" total thickness. Rectangular heavy wall aluminum extrusions shall be provided, vertically and horizontally, creating a superstructure grid work, horizontally underside the roof panel and vertically inboard the rear panel. In addition to the above construction materials, the exterior rear wall, full height and full width, shall be overlaid with polished 4-way aluminum treadplate for a scuff resistant surface.

The extended area shall have an overall length of 21" (front-to-rear), width of 38" wide (side-to-side), and minimum height of 50". The rearward extension's roof top is to be "flush" with forward chassis cab roof top. Overall width of the cab extension/augmentation is to be commensurate with the apparatus compartment module located immediately to the rear and below the extension.

Bottom/floor of the rearward cab extension shall be approximately 16" above the interior chassis cab floor, at least 22" above the chassis frame rails, providing a mounting platform which is cantilevered over the optionally specified compartmentation and/or multiple "waist-high" pre-connect hose beds.

The cab extension shall be for the storage of medical equipment and will include three (3) adjustable shelves and a roll up door with integrated LED strip lights.

NOTE: Color photos of the proposed cab rearward augmentation, and its features, shall be provided to the purchaser.

HELMET HOLDERS

The six (6) driver and passenger seats in the chassis and/or crew cabs shall each be assigned, and interior(s) equipped with a Ziamatic, model UHH-1 helmet holder. Helmet holders shall be supplied by the manufacturer.

STREAMLIGHT LITEBOX LANTERN/FLASHLIGHT

Four (4) each, Streamlight model 45815, orange dual filament lantern(s)/flashlight(s) shall be furnished, complete with charge rack and charger cord for 12-VDC. Light(s) to have an 8-watt spot bi-pin bulb for "back-up" beam. Light charger(s) to be installed inside the chassis cab and wired to the vehicle's 12-volt electrical system "hot" at all times. Location to be determined at pre-build conference.

STREAMLIGHT SURVIVOR FLASHLIGHT(S)

Six (6) each, Streamlight model 90509 orange, "Survivor" flashlight(s) shall be furnished, complete with 12v DC charger. Light charger(s) to be installed inside the chassis cab and wired to the vehicle's 12-volt electrical system "hot" at all times. Location to be determined at pre-build conference.

NEDERMAN TRANSMITTER

One (1) Nederman exhaust system fan auto start transmitter model number 87000318 shall be furnished and installed on the apparatus. It shall be located on the front of the dashboard next to the windshield to allow the activation of the Fargo Fire Departments exhaust system when the apparatus starts up and when the apparatus gets close to the station and backs in.

GPS TRANSMITTER

One (1) GlobalSat GPS transmitting puck model number MR-350P shall be furnished and installed on the apparatus. The GPS puck shall be mounted on the roof of the apparatus in front of the light bar on the passengers' side of the apparatus. The wire for the puck shall be run under the headliner and down the post to the location of the computer mount. When mounting the puck the manufacturer shall seal up the hole with silicone so water does not enter the cab.

MANUAL, BODY PARTS ONLY

One (1) custom parts manual(s) for the factory installed parts only shall be provided in hard copy with the completed unit.

The manual shall contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in alphabetical order
- Instructions on how to locate parts

The manual shall be specifically written for the body model being purchased. It shall not be a generic manual for a multitude of different bodies.

MANUALS, CERTIFICATIONS, AND DIAGRAMS

At the time of delivery, one (1) hard copy(ies) of: each of the following manuals will be provided.

1. Engine manufacturer's certified brake horsepower curve showing the maximum no-load governed speed.
2. Manufacturer's record of pumper construction details, per NFPA 1901.
3. Manufacturer's Run-In Certification with preliminary test results.
4. Pump Manufacturer's Certification of Hydrostatic Tests.
5. Pump Manufacturer's Certification of Pump Test Results.
6. The Certification of Inspection/Test of Fire Department Pumper by an Independent Third Party per NFPA 1901 standards.
7. Weight documents shall be supplied with the completed vehicle to determine compliance with NFPA section 10-1. Weights shall be for each tire or dual set of tires, so as to verify side-to-side loading, to be in compliance with NFPA section 4.12.2.3.3.
8. The complete operation and maintenance manual covering the completed apparatus as delivered including the pump, emergency lighting and siren, generator, or other furnished accessories.
9. A finalized drawing of apparatus as completed.
10. A "Delivery Manual", consisting of a 3-ring notebook type binder with reference tabs for each section, shall be furnished to include the following items: invoice copy(ies), proof of insurance, Manufacturer's Statement of Origin, acceptance forms, certifications, specifications, individual component manufacturer instructions and parts manuals, warranty forms for body, warranty forms for all major components, warranty instructions and format to be used for compliance with warranty obligations, routine service forms/publications, technical publications or training guide for major components, and apparatus body print "as built".
11. Paint numbers of all color coatings.
12. Certifications of water tank capacity.
13. Written load analysis of 12-volt electrical system as installed by body builder.

A test data plate shall be provided at the pump operator's position which gives the rated discharges and pressures together with the speed of the engine as is determined by the manufacturer's test for this particular unit. Plate shall also include delivery date, pump serial number(s), original Customer, and the apparatus manufacturer's serial number.

FIRE PUMP SYSTEM

Due to the multiple building styles and layouts of a rescue pumper the Fargo Fire Department is letting the builder configure the pump location where they feel it is in the best location. The Fargo Fire Department will accept either a mid mount or a rear mount location for the pump, with the rear mount being preferred. No matter what design is submitted the builder must supply the Fargo Fire Department with ten (10) locations and contacts where the design is being used in a climate similar to Fargo in order to insure there will be no problems with the pump in the future.

WATEROUS SINGLE-STAGE CS1250 GPM PUMP

A 1250 gallon per minute, Waterous Model CS, Class A, single-stage centrifugal fire truck pump shall be furnished, mounted in the vehicle. The specified pump transmission gear ratio shall allow the pump to deliver the percentage of rated capacity at discharge pressures indicated below, while the drive engine is running in its peak performance range/RPM:

- 100 percent of rated capacity at 150 pounds net pressure
- 100 percent of rated capacity at 165 pounds net pressure
- 70 percent of rated capacity at 200 pounds net pressure
- 50 percent of rated capacity at 250 pounds net pressure

PUMP INSTRUCTION MANUALS

Two (2), Waterous instruction manuals, one (1) digital CD format, and one (1) hard copy, to be provided upon delivery of the apparatus. Manuals to be pump model and serial number specific, to include but not be limited to operation instructions, maintenance (lubrication), and illustrated parts break-down.

PUMP TEST DATA PLATE

The pump shall be provided with a metal plate giving the rated flow at "capacity" and "pressure" test pressures, together with the RPM of the engine at those pressures and deliveries, and mounted in clear view of the pump operator's panel. Test plate shall also indicate pump serial number, engine governed speed, and pump mode of operation for all four individual pump rating tests.

MECHANICAL PUMP SEAL

The Waterous pump shall be equipped with a mechanical self-adjusting impeller shaft seal assembly.

AIR PUMP SHIFT

The pump shift shall be pneumatically operated using a standard automotive air valve to control a double action air shift cylinder, designed so that the pump shift remains in its latest position in the event of loss of air pressure. Shift engagement shall be provided by free-sliding collar with internal locking mechanism. The pump shift engagement control will be located to be easily accessible to driver. Engagement control will include: air control lever with spring loaded locking collar to prevent it from accidentally being moved from the "ROAD" or "PUMP" position, "PUMP ENGAGED" light indicating mechanical shifting of the pump into the "ROAD" position has been accomplished, "O.K. TO PUMP" light to indicate chassis transmission is in the correct pumping gear, and a control plate describing operation of the pneumatic power shift assembly.

An additional indicator light to be furnished on pump control panel, adjacent to, or integral with, engine throttle, to indicate that the vehicle transmission is in the proper gear and driveline is rotating: "O.K. TO PUMP".

TRANSMISSION LOCK-UP

The direct gear (1:1 ratio) vehicle transmission lock-up for the fire pump operation shall engage automatically when the pump shift control, in the cab, is activated.

PUMP SHIFT OVERRIDE

The pneumatic pump shift shall be provided with a mechanical pump shift override with single override control located on the driver's side of the vehicle. Pump pneumatic shift override control shall allow for manual shifting of the air cylinder, allowing the pump to be shifted manually.

AUXILIARY COOLING SYSTEM-GATED

A supplementary heat exchanger system shall be installed on the apparatus. The heat exchanger shall be installed inside the pump or engine compartment, controlled from the pump operator's panel, and labeled to identify its operation. Pressure line (from pump discharge) to be gated, with a Class-1 1/4-turn 3/8" ball valve control on pump control panel, with instructional nameplate.

MANIFOLD DRAIN: DISCHARGE AND SUCTION PORTS

A Trident equivalent manifold drain valve, with bronze body will be furnished installed inside pump compartment. Drain valve to be mounted in lowest portion of pump compartment, piped with high pressure nylon tubing, to low points of pump suction and discharge cavities to allow simultaneous draining through a single drain valve.

Drain valve to be a 10-port "screw type" mounted beneath all drain ports, to include a rotating control shaft and remote pump panel fluted control with engraved placard describing operation.

INTAKE RELIEF VALVE, 2-1/2" STAINLESS STEEL

A pump suction intake relief valve shall be furnished, installed inside pump compartment, flange bolted or threaded to suction cavity of the fire pump. Valve to be of the pre-set (to 125 psi) adjustable bypass design, to dump below the vehicle excessive inlet water pressure. The relief valve shall be adjustable from the pump operator's panel. The fire pump suction manifold Intake Relief Valve's outlet is to terminate with a 2-1/2" i.d. flexible hose, outlet located at side of apparatus, away from the fire pump operator's location, and labeled: "**Pump Intake Pressure Relief Outlet**".

PRESSURE GOVERNOR and MONITORING DISPLAY

Fire Research PumpBoss model PBA400-A00 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8" wide by 1 3/4" deep. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring. Location of the governor and monitoring display shall be at pump operator's panel

It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Engine RPM
- High Transmission Temperature
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Battery Voltage
- Low Engine Oil Pressure
- High Engine Coolant Temperature

PRIMING PUMP

The pump shall be capable of taking suction and discharging water with a lift of 10 ft. in not more than 30 seconds with the pump dry, through 20 ft. of suction hose of appropriate size. It shall be capable of developing a vacuum of 22" at an altitude of up to 1000 ft.

A high capacity positive displacement oil less priming system shall be furnished, consisting of: a Waterous VPO rotary vane priming pump with 12-volt electric motor drive, and a manual/electric priming valve assembly with remote pump operator's panel mounted pull/spring-return control. Priming pump shall discharge directed to ground

HEAT ENCLOSURE, ALUMINUM

A removable heater casing is to be provided, completely enclosing the underside of the fire pump compartment module. Heater casing side and end panels are to be fabricated entirely of natural finish smooth sheet aluminum, bolted to and easily removable from the bottom perimeter of the pump module. So as to allow maximum ground clearance, the heater casing shall of the minimum depth required to enclose the pump and its accessories. Two (2) individual smooth aluminum slide-out bottom panels are to be provided, criss-cross reinforced with drain holes and ¼-turn butterfly clamp latch, removal of which allows for inspection of and access to the fire pump.

TWO (2) HOT WATER TYPE PUMP COMPARTMENT HEATERS

Two (2) each; 30,000 BTU Badger R-255-0 or equivalent hot water type automotive heaters shall be furnished and installed inside the enclosed pump compartment. Heater installations to include: gated engine coolant feed and return lines, dual 12-volt electric fans, and fan controls located on pump control panel.

Duct work shall be furnished, from at least one of the heaters, directed to the back side of the pressure gauges and to the fire pump master drain manifold.

SPRAY FOAM PUMP COMPARTMENT

The inside of the pump compartment shall be coated with spray foam insulation in order to retain as much heat as possible. The spray foam shall not interfere with future maintenance issues such as replacing gauges.

PUMP WARRANTY

The specified Waterous fire pump and Waterous accessories shall carry a Waterous **five (5) year warranty** covering defective parts only.

PUMP TEST

The above specified pump test/certification to be performed by apparatus manufacturer and "witnessed" by an independent third party as per NFPA 1901 pumping standards, with proper serialized certification provided upon apparatus delivery.

"ROUND TUBULAR" HIGH-FLOW SUCTION MANIFOLD PIPING

A stainless steel "high-flow" round tubular suction manifold shall be furnished, flange bolted or Victaulic coupled to and easily removable from, the fire pump's volute suction inlet. All auxiliary side threaded taps and/or Victaulic risers shall be "coped" to conform to radius of larger size waterway, so as to provide unsurpassed flow characteristics.

ANODE, INLET

One (1) sacrificial zinc anode shall be provided in the water pump inlet manifold, to protect the pump from corrosion.

PUMP SUCTION INLETS

Following specified pump manifold inlets shall be of proper inside diameter for rated pump capacity, equipped with zinc die cast screens so as to provide cathode protection for pump waterways.

All intakes shall be provided with suitable closures capable of withstanding 500 psi; threaded caps shall be chrome plated brass, rocker lug 3" and smaller, long handled larger than 3".

INLET BLEEDER VALVES

Where specified, each gated intake shall be equipped with a bleeder valve located inside pump compartment (inside rear compartment-for rear suction), upstream gate valve, with remote bleeder control in close proximity to the intake. The gated inlet bleeders shall consist of: 3/4" high pressure flexible hose assemblies extending between suction valve and bleeder valve, 3/4" cast bronze or stainless steel bleeder valve, exterior bleeder valve control handle, and an engraved or printed identification label. Bleeder controls for all gated inlets are to be located in the pump operator's panel. The bleeder valves shall be rotating quarter-turn style equipped with rectangular chrome plated control handles, which are horizontal when closed.

HOSE THREADS

Where specified, all screw-on/off threads shall be NST (National Standard Threads), all "sexless" couplings shall be Storz.

PUMP OVERHEAT PROTECTION

One (1), Watrous Overheat Protection Manager (OPM) model #82516-1A, thermal relief style valve to be furnished, installed. The OPM consists of a valve that automatically opens when the water in the pump reaches 140 degrees and a warning light located on the pump operator's panel that is triggered by a thermal switch when the water in the pump reaches 180 degrees. Discharge shall be "to ground". The warning light and test button shall be mounted to a heavy polished casting that is mounted to the pump operator's panel.

SELF BLEEDING SUCTION CAPS

The specified "threaded" suction caps shall be the VLH Class-1, Trident or equivalent which incorporates a cross-machined thread design to automatically relieve stored pressure in the line during un-capping.

DISCHARGE VALVES

All 2-1/2" and 3-1/2" discharges shall be equipped with Akron quarter turn, ball style, in-line valves. The valves shall be equipped with stainless steel or chrome plated brass ball and a "spring-loaded" seal assembly.

INTAKES, 2-1/2"X5", WITH DUAL 6" GATE VALVES & INTAKE RV's

Due to the possibility of the apparatus being either a mid ship pump or a rear pump configuration the following intakes shall be designed into the apparatus:

A 6" NST main non-gated inlet shall be installed to the suction side of the pump. Inlet shall be equipped with removable screen and long handled pressure cap.

A 6" gated inlet with 30 degree droop to 5" storz connection shall be installed to the pump intake side. A 6" electric operated butterfly valve with manual over ride shall be installed with position indicator lights. The control shall be located on the pump operator's control panel. The inlet shall be equipped with a suction grid strainer and cap.

An Akron 2-1/2" gated suction valve shall be installed in the left side of pump panel with the valve body behind the panel. It shall be piped to the left side suction tube at the front of the pump. The valve shall be equipped with a brass inlet strainer, 2-1/2" chrome inlet swivel, chrome plug and chain. This intake shall be controlled at the valve.

TANK-TO-PUMP CONNECTIONS

A 3-1/2" Akron 1/4-turn ball style tank-to-pump valve to be furnished. Tank-to-pump suction shall allow a flow rate exceeding 600 GPM.

NOTE: PVC tank-to-pump piping is not acceptable.

TANK-TO-PUMP CHECK VALVE

A 4" i.d. bronze corrosion resistant tank-to-pump suction check valve is to be furnished, 600 GPM flow capable, to prevent "back-flow" of water from the pump-to-tank if the tank suction valve is inadvertently left open. The tank-to-pump suction valve is to be remote controlled with lever style valve actuator and a manual push-pull style operator's panel control. Tank-to-pump suction valve control is to be "In-Closed" and "Out-Open".

2" TANK REFILL, BALL VALVE

One (1), gated 2" tank fill discharge line, from pressure side of fire pump to water tank to be provided, with: female 2" TIPT tank fill spud located at top front of water tank, high pressure wire reinforced 2" hose with reusable threaded stainless steel end couplings, 2" Akron 1/4-turn ball style discharge valve, and a push-pull locking control with color coded nameplate located on the pump operator's control panel. Control nameplate to read: "TANK FILL".

TANK RECIRCULATING - PUMP COOLER

One (1), gated 3/8" pump recirculating/cooling line, from pressure side of fire pump to water tank top to be provided with: 3/8" female TIPT spud located at top front of water tank, high pressure tubing, and 3/8" bronze body 1/4-turn ball style valve with chrome handle located on operator's control panel. Valve to be identified as pump cooling line.

INDUSTRIAL PUMP DISCHARGE OUTLET CONTROLS AND ACTUATORS

All discharge valves shall have operating controls and actuators that allow the valve to be positioned incrementally from closed to full open, and locked in any selected position. Each valve control is to be adjacent to its respective pressure instrument.

Each of the specified 3" diameter or larger discharge valves are to have an operating mechanism which shall not permit changing the position of the flow regulating element of the valve from full close to full open, or vice versa, in less than 3 seconds.

DISCHARGE OUTLET BLEEDERS

Each of the following specified gated discharges shall be equipped with a "discharge outlet bleeder". The outlet bleeders shall consist of: 3/4" high pressure flexible hose assemblies extending between discharge valve and bleeder valve, 3/4" cast bronze or stainless steel bleeder valve mounted interior of pump compartment (inside rear compartment-for rear discharges), and an exterior bleeder valve control handle with color coded (to match corresponding discharge outlet) engraved or printed identification label. All bleeder controls are to be located on the pump operator's panel in a single row immediately above the runningboard/floor level. The bleeder valves shall be rotating quarter-turn style equipped with rectangular chrome plated control handles, which are horizontal when closed.

HOSE THREADS

Where specified, all screw-on/off threads shall be NST (National Standard Threads), all "sexless" couplings shall be Storz.

"ROUND TUBULAR" STAINLESS STEEL DISCHARGE MANIFOLD

A stainless steel "round tubular" discharge manifold shall be furnished, flange bolted or Victaulic clamped to and easily removable from, the fire pump's large diameter discharge outlet taps.

See following specifications describing the number/size/locations of outlet gate valves to be furnished.

Heavy wall threaded stainless steel pipe and pipe fittings shall be used, wherever possible, downstream of the specified side outlet and top deluge discharge valves.

All flexible discharge lines and bleeder lines, downstream of respective valves, shall be reinforced high pressure hose assemblies with stainless steel or brass end fittings.

Pressure gauge tubing lines shall be clear polypropylene with brass fittings, manifold drain lines (that are not high pressure hose assemblies) shall be copper tubing.

All discharge manifolds and fittings, suction manifolds and fittings, discharge and suction valves, tubing's, and hoseline assemblies shall be pressure tested after installation.

DISCHARGE PIPING ANODES

Two (2) each, replaceable threaded anode plugs shall be furnished and installed in the discharge piping of the fire pump to help protect the pump and piping from electrolysis.

DISCHARGES

Due to the possibility of the apparatus being either a mid ship pump or a rear pump configuration the following intakes shall be designed into the apparatus. Some intakes will be given a placement for either a rear or side mounts depending on the layout of the apparatus.

THREE (3) REAR 2-1/2" DISCHARGE

Three (3), rear 2-1/2" gated discharge to be provided with: 2-1/2" NST chrome plated brass rocker lug cap with chain, 2-1/2" NST male x 2-1/2" NST rocker lug swivel female 30 degree chrome plated brass elbow extension, 2-1/2" NST male chrome plated brass outlet adapter, 3/4" bleeder valve with exterior remote control, 2-1/2" i.d. stainless steel pipe or wire reinforced hose assembly with 2-1/2" stainless end fittings, 2-1/2" Akron 1/4-turn discharge valve with chrome plated ball and spring loaded self-adjusting seal assembly (located inside pump compartment), and push-pull chrome "twist-to-lock" discharge control handle with recessed color coded nameplate located on the pump operator's control panel.

REAR OR PASSENGER SIDE LDH DISCHARGE

One (1), rear or passenger side Large Diameter Hose (LDH) gated discharge to be provided with a 5" Storz "locking" style reducing cap, matching 5" Storz x 4" NST rocker lug swivel female 30 degree lightweight elbow adapter, 4" NST male outlet fitting, 3/4" bleeder valve with exterior remote control, stainless steel pipe or wire reinforced hose assembly with stainless end fittings, 3-1/2" Akron "ELECTRIC ACTUATOR OPERATED" 1/4-turn discharge valve with chrome plated ball and spring loaded self-adjusting seal assembly (located inside pump compartment), operator's panel mounted valve control console with spring loaded open/close toggle switch and "OPEN/MULTIPLE-TRANSITION/CLOSED" indicator light.

One (1) REAR OR PASSENGER SIDE 2-1/2" DISCHARGE

One (1), rear or passenger's side 2-1/2" gated discharge to be provided with: 2-1/2" NST chrome plated brass rocker lug cap with chain, 2-1/2" NST male x 2-1/2" NST rocker lug swivel female 30 degree chrome plated brass elbow extension, 2-1/2" NST male chrome plated brass outlet adapter, 3/4" bleeder valve with exterior remote control, 2-1/2" i.d. stainless steel pipe or wire reinforced hose assembly with 2-1/2" stainless end fittings, 2-1/2" Akron 1/4-turn discharge valve with chrome plated ball and spring loaded self-adjusting seal assembly (located inside pump compartment), and push-pull chrome "twist-to-lock" discharge control handle with recessed color coded nameplate located on the pump operator's control panel.

SELF-BLEEDING DISCHARGE CAPS AND ELBOWS

Where specified, the rocker lug discharge caps and outlet elbow extensions are to be VLH, Class-1, Trident, or equivalent which incorporates a cross-machined thread design to automatically relieve stored pressure in the line during uncapping/unthreading.

HOSE CAPS AND REDUCING ADAPTERS

Two (2), each 2-1/2" NST female x 1-1/2" NST male chrome plated brass rocker lug reducing adapters, with 1-1/2" NST hose caps with chains shall be furnished, in exchange for the same quantity of previously specified 2-1/2" hose caps with chains.

TOP DELUGE DISCHARGE - HAND CRANK VALVE

One (1), top (above pump) gated deluge discharge to be provided with: 3" riser outlet thread/flange, 3" i.d. stainless steel stationary riser pipe, 3/4" bronze "auto-drain" valve located immediately downstream of gate valve, 3-1/2" Akron "ELECTRIC ACTUATOR OPERATED" 1/4-turn discharge valve with chrome plated ball and spring loaded self-adjusting seal assembly (located inside pump compartment), operator's panel mounted valve control console with spring loaded open/close toggle switch and "OPEN/MULTIPLE-TRANSITION/CLOSED" indicator light.

DELUGE MONITOR

A 1000 GPM TFT Crossfire Monitor (model xfc-62 package) shall be plumbed in and mounted above pump compartment, this shall have a quick release mount so it can be removed and placed in a portable base with two (2) 2 1/2" inlets that will be provided by builder. The setup of the monitor will be discussed at pre-build. Monitor shall have manual free-swivel and wheel controlled elevation.

FIRE PUMP COMPARTMENT

The fire pump compartment location shall be determined by the manufacture. This apparatus is to have either a rear pump location or a mid mount style pump location. Depending on how the apparatus is configured, its features and accessories should include the following:

3D ENGINEERED REAR PUMP ENCLOSURE

The following specified fire pump enclosure (compartment) is to be "fully engineered" as an integral part of the compartmented apparatus body, with ALL structural fabrications, pump inlet/outlet panels, pump control panel, gauge/instrument panel, hose beds/trays, and fire pump mounting brackets are to be computer three-dimensional modeled and on-screen assembled. Each individual pump module component's part profile is to be traceable to a precision engineered digital drawing.

In addition to the part profile and fabrication details, the precision engineering is to include the mounting and fastener holes to allow the assembly of all related fire pump compartment components, including but not limited to: gauges and instrumentation, pump drain and bleeder controls, pump discharge and suction valve controls, handrail bracket and step mount holes, and all other accessories which are to be bolted to the pump module.

SPEEDLAY HOSEBEDS

The following specified speedlay hose beds shall be located in the forward lower portion of apparatus body, behind the cab.

REMOVABLE POLY SPEED LAY HOSE BEDS

Three (3), horizontal modular and removable speed-lay hose beds shall be provided, fabricated of 1/2" thick Poly.

Hose beds shall be accessible for loading via removable "speed lay hose beds". There shall be two (2) removable "speed lay hose beds" designed to accommodate 200 ft. each of 1-3/4" double jacket fire hose. There shall be one (1) removable "speed lay hose beds" designed to accommodate 200 ft of 2 1/2" double jacket fire hose.

4-way mirror finish stainless steel cartridge cavity surrounds shall be provided, driver and passenger side, to protect side panels during hose deployment and installation of cartridge hose beds.

The specified speed lay swivel style discharge outlet shall be located "overhead" the hose bed floor, allowing hose coupling to the outlet after installing the loaded cartridge.

Swivel outlet shall also allow for deployment of the pre connected hose, to left and right sides of the vehicle.

SPEEDLAY 2-1/2" VALVE, 1-1/2" NST OUTLET

two (2), forward horizontal speed-lay 2" gated discharge to be provided with: 1-1/2" NST male outlet x 2-1/2" inlet 90 degree bronze or stainless steel overhead discharge swivel, hoseline bleeder valve, 2" i.d. stainless steel pipe or wire reinforced hose with 2" stainless end fittings, 2-1/2" Akron 1/4-turn discharge valve with chrome plated ball and spring loaded self-adjusting seal assembly (located inside pump compartment), and push-pull chrome "twist-to-lock" discharge control handle with recessed color coded nameplate located on the pump operator's control panel.

SPEEDLAY 2-1/2" VALVE, 2-1/2" NST OUTLET

One (1), forward horizontal speed-lay 2 1/2" gated discharge to be provided with: 2-1/2" NST male outlet x 2-1/2" inlet 90 degree bronze or stainless steel overhead discharge swivel, hoseline bleeder valve, 2 1/2" i.d. stainless steel pipe or wire reinforced hose with 2 1/2" stainless end fittings, 2-1/2" Akron 1/4-turn discharge valve with chrome plated ball and spring loaded self-adjusting seal assembly (located inside pump compartment), and push-pull chrome "twist-to-lock" discharge control handle with recessed color coded nameplate located on the pump operator's control panel.

SWING-OUT VERTICAL HOSE ROLLERS

Front speed-lay cavity openings, driver side and passenger side, shall include swing-out panel mounted vertical polished tubular stainless steel hose roller assemblies. With panels in extended position, the rollers shall prevent damage to the door jamb weather-stripping. Hose rollers are to be in addition to the specified mirror finish stainless edge protection.

FOAM SYSTEM, DIRECT DISCHARGE DUAL AGENT FOAM SYSTEM

The following specified Direct Discharge Foam System shall be of the "dual agent" type, with features and accessories as per the following:

MASTER FOAM MANIFOLD

A flanged bolt-on or Victaulic grooved stainless steel pump discharge foam manifold shall be furnished, for use with the specified direct discharge injection foam system. Discharge foam manifold shall be of adequate size/capacity to handle flows not exceeding 1000 gallons per minute.

FOAM MANIFOLD DRAIN

A 3/4" quarter-turn bronze drain valve, with chrome plated control handle and recessed name tag, shall be furnished, located on a side pump panel immediately above the running board/rub rail level. Manifold drain line shall extend from a bottom tap on the foam manifold, with positive "gravity-drain" to the panel mount drain valve, assuring complete drainage of the manifold downstream of its check valve and upstream of the foam capable discharge valves.

CLASS - A & Class B FOAM CAPABLE DISCHARGE OUTLETS

The two (2) 1 3/4" speed-lays shall be A & B foam capable. The 2 1/2" speed-lays shall be A & B foam capable.

PLACARDS, DUAL AGENT FOAM SYSTEM

A foam system piping schematic placard, for "dual agent" system, shall be furnished, located adjacent to the system's control console. A foam system rating placard shall also be furnished, for the particular model and brand, also located adjacent to the control console. Placards shall be provided by foam system manufacturer, chrome plated cast metal.

All foam capable discharge controls shall be identified, with colored engraved nameplates to read:

FOAM

WATEROUS ADVANTUS DUAL AGENT FOAM SYSTEM

The apparatus shall be equipped with a "dual agent" Waterous Advantus, electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates and most Class B foam concentrates.

The foam injection system shall be plumbed to the specified onboard Class A foam and Class-B foam concentrate tanks with proper size hoses to include shutoff valves and removable strainers.

Water tank shall be plumbed to the specified A/B/Flush foam selector valve, for use during "flush" cycle.

FOAM DUAL TANK MANUAL SELECTOR VALVE

The above specified foam system shall be equipped with a Waterous dual tank selector valve.

DUAL FOAM RESERVOIRS, FOR CLASS-A AND CLASS-B CONCENTRATES

One (1), 15-gallon capacity Class A foam concentrate cell and one (1), 30-gallon capacity Class B foam concentrate cell to be furnished, located interior of specified non-metallic water tank, totally separate from water cavities. Each foam cell shall be equipped with exterior top fill tower with removable cover

and interior screen, bottom foam liquid drains, means for venting of foam cell, and appropriate foam liquid outlet for use with specified foam system.

FOAM FILL TOWERS, COLORS AND LABELS

The specified Class-A and Class-B foam fill tower lids (covers) shall be of contrasting colors to that of each other and the water tank fill stack lid. Permanently affixed engraved name plates shall be installed on the foam concentrate tank fill lids, to read: FOAM TANK FILL - CLASS-A CONCENTRATE ONLY and FOAM TANK FILL - CLASS-B CONCENTRATE ONLY.

FOAM RESERVOIRS, DRAIN

The specified foam reservoirs shall each have a manual drain, consisting of a .750" ball style 1/4-turn bronze valve, valve control with recessed color coded identification label to read FOAM DRAIN/BACK FILL, and outlet tubing to below the vehicle. Drain valves to be located inside the pump compartment accessible through an access door on the passenger's side pump panel.

ON-BOARD 12-VOLT "POWERED" FOAM REFILL SYSTEM

To increase safety of firefighter personnel, the apparatus shall be equipped with an electronic, automatic, concentrate refill system. System must be capable of automatically stopping when cell is full and include a manual override feature. Valve control, intake and flush ports shall be located within corresponding panel plate.

PUMP DRIVER'S SIDE CONTROLS

The pump operator's control panel shall be located on driver's side rear of vehicle or the driver's side middle of the vehicle. All pump discharge and suction controls are to be mounted on this pump operator's control panel, so as to permit operation of the pump from one central location. All side mechanical pump actuator rods, rotating and push-pull, will be heavily cadmium plated solid cold roll steel, equipped with adjustable clevis joints or swivel ball joints and chrome plated brass or black phenolic control handles/knobs. All manual push-pull discharge controls shall be chrome plated, straight-pull, with twist-to-lock (see individual discharge outlet descriptions) hand grips.

The upper portion of the pump control panel shall accommodate the specified "opening" instrument panel, and lower portion shall accommodate the specified inlet/outlet/drain valve and pump controls.

IDENTIFICATION TAGS

All discharge controls and outlets, suction controls and inlets, drain valve controls, bleeder valve controls, and all other pump related controls shall be properly identified with permanent engraved or cast nameplates describing function and operation of each control. Nameplates for discharge controls, discharge outlets, and respective pressure gauges will be color coded and indicate: numerical sequence, location of outlet, type of discharge, and size of hose to be used. The nameplates shall be recessed into the discharge control hand grips and discharge and suction drain and bleeder control handles.

Any specified air or electric toggle switch gated pump suction controls, with indicator lights, shall be grouped together on pump control console, for ease of identification, equipped with permanently engraved nameplates recessed into a single piece polished stainless steel surround bezel.

PRESSURE GAUGES/INSTRUMENTS ALIGNED WITH DISCHARGE CONTROLS

The following specified pump panel mounted discharge controls shall be located adjacent to or immediately below and in line with corresponding individual discharge pressure gauge. The control panel shall be configured in an organized manner, "user-friendly", side-to-side across the entire panel.

PUMP CONTROL GAUGE & INSTRUMENT PANEL, HINGED

The specified pump pressure gauges and engine monitors/instruments shall be installed on a brushed stainless steel hinged gauge panel, located above the driver side pump controls. The gauge/instrument panel is to be equipped with a polished stainless steel piano hinge and two adjustable-grip chrome plated lift-and-turn latches. Gauge panel to be hinged, to allow access to back of gauges and interior fire pump compartment.

PUMP GAUGE & INSTRUMENT PANEL 12-VOLT LED LIGHTING

An LED "light stick" shall be provided, with multiple 12-volt LED elements. Light stick shall be located overhead the pump gauge/instrument panel, installed beneath a protective stainless steel light shield, illuminating the gauges, instruments, and controls. Lights to be activated by a switch on the pump panel.

SIDE PUMP PANEL LIGHTING

Multiple polished stainless steel covered 12-volt LED shielded pump panel light fixtures shall be furnished, located top outboard corners of side pump panel(s). Lights to be activated with above switch.

AIR HORN SWITCH - PUMP GAUGE PANEL

A weatherproof push button or rocker switch shall be furnished on the pump gauge panel, with an engraved nametag to read: "EMERGENCY AIR HORN." Switch shall activate above specified high capacity 12-volt air solenoid.

COLOR CODED DISCHARGE NAMEPLATES: NOMENCLATURE

Discharge name plates and/or control diagrams shall be permanently engraved or encapsulated printing color coded to match the individual outlets and pressure instruments, nomenclature to identify: physical location, size of hose to be attached, and type of discharge. Example: REAR PASSENGER SIDE 2-1/2" PRECONNECT DISCHARGE

Color matching name plates shall be provided for: Discharge Outlet (or Hosebed), Discharge Control, Discharge Pressure Instrument, and the Discharge Bleeder Control.

Suction name plates are to be of the same single color, contrasting to the discharge colors.

Apparatus locations are to be identified as: FRONT (forward facing), PASSENGER SIDE (curb side facing), REAR (rearward facing), and DRIVER SIDE (street side facing).

On sides of apparatus, locations are to be identified as FORWARD and REARWARD.

At rear of apparatus, locations to be identified as INBOARD, OUTBOARD, OR CENTER.

MASTER GAUGES, VACUUM & PRESSURE

NO-SHOK LIQUID FILLED GAUGES

Master pump intake and pump discharge pressure indicating devices shall be located within 8" of each other, edge to edge, with the intake (suction) pressure indicating device to the left of the pump discharge pressure indicating device.

A 4" diameter NoShok compound style pressure gauge to be furnished, registering 0 x 600 psi, black numerals on white background. Gauge needle shall have a "bright orange" tip for improved visibility. Gauge to be piped to discharge volute of fire pump, equipped with a black permanently engraved identification nameplate installed below the gauge, to read: "DISCHARGE."

A 4" diameter NoShok compound style pressure gauge to be furnished, registering -30 x 400 psi, black numerals on white background. Gauge needle shall have a "bright orange" tip for improved visibility. Gauge to be piped to suction volute of fire pump, equipped with a black permanently engraved identification nameplate installed below the gauge, to read: "SUCTION."

TEST GAUGE PANEL

A test plug assembly to be furnished and installed on specified gauge panel adjacent to respective pump suction and pump discharge gauge. Test plugs to be piped to pump suction cavity and discharge cavity using high pressure clear nylon tubing with brass fittings.

INDIVIDUAL DISCHARGE GAUGES, 2-1/2" DIAMETER

A 2-1/2" diameter NoShok compound style discharge pressure gauges to be furnished for each individual discharge. They shall register 0 x 400 psi, black numerals on white background. Gauge needle shall have a "bright orange" tip for improved visibility. Gauges to be located in a uniform manner no more than 6" from its respective discharge valve control.

Each gauge and respective discharge valve control to be equipped with color coded permanently engraved identification nameplate to describe numerical sequence, location, type and size of outlet.

WATER LEVEL INDICATOR - TANK VISION

One (1), FRC, "Tankvision" WLA-200-A water tank level indicator to be furnished with: weatherproof encapsulated high intensity LED light indicator, tank level sending unit, and protected wiring loom. Water tank level indicator to be mounted on pump control panel.

FOAM LEVEL - INDICATORS - TANKVISION-2 EACH

Two (2), FRC, "Tankvision" foam tank level indicators to be furnished with: weatherproof encapsulated high intensity LED light indicator, 30-ft sensor cable extension for foam tank level indicator, tank level sensing probe, and protected wiring loom. Foam tank level indicators to be mounted on pump control panel.

POLY WATER TANK -- LIFETIME WARRANTED - 750 WATER

The apparatus shall be equipped with a 750 gallon water capacity polypropylene thermoplastic water tank.

The tank body and end bulkheads shall be constructed of 1/2" thick, polypropylene, nitrogen-welded and tested inside and out. Tank construction shall conform to NFPA standards.

The water fill tower shall be designed, sized and located as required by the needs of the tank. The 1/2" thick polypropylene fill and overflow tower shall be equipped with a hinged lid and a removable polypropylene screen.

WARRANTY

The booster tank shall have a lifetime warranty as provided by the tank manufacturer.

TANK STRUCTURE WARRANTY

The tank cradle shall have a lifetime warranty, as provided by body builder.

OPEN-TOP DUNNAGE/WALKWAY AREA

Open dunnage/walkway area side-to-side width is to be at least 18", and the front-to-rear length is to be at least 72". Dunnage/walkway area to provide a walkway from the front to rear of the apparatus the forward portion to be sized to fit the water tank and foam tank fill towers.

A front to back mounted hose body transverse divider panel is to be provided, fabricated with perimeter flanges, and bolted in position (so as to be removable) 18" from the passenger side compartment rear wall. Transverse divider panel is to form the front to back walkway area.

Location of the transverse divider panel is to provide for a walkway

Dunnage floor gratings are to be provided, same material and construction as is specified for the hose bed.

HOSE BED

The main overhead hosebed area shall be designed to accommodate: 500 ft. of 3" double jacket fire, and 500 ft. of 5" large diameter hose. The apparatus main hose bed area is to be located to the rear of the body.

Extruded aluminum slatted hose bed floor gratings are to be furnished, running longitudinally the full length of the hosebed. The hose bed floor gratings are to be assembled with bolts (not welded), so as to allow for future modifications and repairs to the grating assembly.

ADJUSTABLE HOSEBED DIVIDER TRACKS

Channel fabricated stainless steel hosebed divider horizontal slide tracks are to be furnished, transverse at the rear of hosebed, designed so as to retain the floor gratings and prevent snagging of hose or couplings during deployment and re-loading operations.

In addition to the rear transverse hosebed divider slide track, two (2) parallel transverse stainless steel horizontal channel tracks shall be furnished, bolted to/removable from the specified forward cross divider. Forward and rear horizontal channel tracks are to be provided with sliding friction clamps and threaded studs with acorn nuts, allowing infinite side-to-side adjustment of hosebed divider location.

HOSEBED DIVIDER, 1/4" PLATE ALUMINUM

One (1) each, full length full depth infinitely adjustable hosebed divider shall be furnished, fabricated of .250" unpainted machine sanded or abraded smooth aluminum with integral vertical front flange and bottom reinforcing base flange. The top rear corner of the divider panel shall have a 3" radius, to prevent damage to tarps and restraints. All horizontal, vertical, and rear radius metal edges are to be DA sanded smooth to prevent personnel injury and hose damage.

HOSEBED COVERS -- ALUMINUM 4-WAY

Two (2), individual polished 4-way aluminum tread plate hose bed covers to be furnished, extending from front hosebed cross divider to rear of body. Hosebed covers to be triple fabricated construction for maximum strength, equipped with polished stainless steel full length piano hinges bolted to the outside edge of the hosebed and hosebed covers so that the cover opens to the outward side of the apparatus. Each hosebed cover shall have a hydraulic type opener installed with a lock on it to keep hosebed cover open.

Two (2) individual Black vinyl coated nylon hosebed cover end flaps (tarps) shall be furnished with weighted bottom seams, permanently attached to bottom rear flange of hosebed covers.

TAILBOARD, EMBOSSED 3/16" ALUMINUM TREADPLATE

A 101" wide rear step/tailboard shall be furnished, constructed of .187" polished 4-way aluminum tread plate material, with an NFPA approved (as slip-resistant) "embossed" tread top surface.

The above specified 101" wide rear step/tailboard shall be fourteen (14)" deep (front-to-rear flange), across the entire width of the tailboard.

TOW EYES, TWO (2) EACH

Two (2) tow eyes shall be installed below the rear of body, eyes to be 3" in diameter.

COMPARTMENTED BODY CONSTRUCTION MATERIALS:

FABRICATIONS

The apparatus hose body and compartments shall be fabricated entirely of 12 gauge thickness, "flat-leveled" sheet stainless steel, with a #4-polished (brushed) 2-side finish.

Other specified interior compartment shelving, trays, and shelving tracks shall be fabricated of smooth aluminum, of designated thickness, and shall have a machine sanded finish.

FASTENERS

All screw and bolt fasteners shall be stainless steel with stainless steel hex "Ny-Lok" threaded nuts designed to prevent loosening.

CONSTRUCTION METHODS:

Specified upper level side compartments shall have fabricated vertical door jambs located above wheelwell enclosure, separating forward/upper level wheelwell/rear compartment areas. Door jambs are to be bolted to sweep-out threshold portion of upper level compartment opening and to the underside of overhead compartment roof fabrication, easily removable so as to allow future modifications to door opening size.

For maximum cubic footage of compartments, the lower portion of the interior forward side compartments shall be recessed into within 4-inches of the chassis frame rail depth, both drivers' side and passenger's side of the apparatus body. Recessed areas to be full width of interior compartment, at least 30" high, occupying entire underbody area beneath the outboard portion of the water tank.

REAR BODY CORNER STYLE:

The rear driver side and passenger side body corners shall be "square" outboard fabrications, with full height integral side door jamb. The rear facing vertical back surface of body corners shall allow for mounting of rear DOT and emergency lighting, handrails, multiple steps, and optionally specified accessories.

FRONT BODY CORNER STYLE:

The front body corners shall have full height vertical front surfaces, and integral forward compartment door jambs.

SWEEP OUT COMPARTMENT FLOORS:

Driver's side, passenger's side, and rear compartments shall be equipped with "sweep/wash-out" floors, which are raised at least 1" above the compartment door opening threshold and exterior rub rail.

CONSTRUCTION FEATURES:

Wheel well trim shall be furnished as specified below, bolted in position and easily replaceable, surrounding driver's side and passenger's side rear body "radius" wheel well cut-outs.

A removable sheet stainless steel circular underside wheel well liner shall be furnished, driver and passenger side wheel well housings. Liners shall be bolted in position and easily removable to allow for underside access to the optional wheel well panel mounted accessories, such as: warning light fixtures, fuel fill piping, air bottle containers.

During assembly all areas where metal mates or abuts shall be properly caulked with G.E. or equal silicone body sealant to prevent moisture penetration.

DRIVER AND PASSENGER SIDE UNDER BODY WINCH RECEIVERS

Two (2), class-3 hitch/winch 2" x 2" receivers shall be furnished, mounted one (1) beneath the driver side body rub rail (at least 18" above ground level), one (1) beneath the passenger side body rub rail (at least 18" above ground level), ahead of each rear wheelwell housing. Receiver tubes shall be rigidly bolted/mounted to sides of chassis frame rails using heavy plate steel mounting flanges with integral

horizontal and vertical gusset plates. Steel mounting flanges shall be transversely reinforced with bolted (removable) heavy wall steel tube cross-support structures.

Hitch receiver mountings shall allow for a minimum 1500 lb capacity vertical lift, and 5000 lb capacity horizontal pull.

ELECTRIC WINCH RECEPTACLES

A 12-volt winch power receptacle shall be furnished at each of the side receivers, complete with insulated 2-Gauge battery cable wired to the vehicle's starter/power post.

WINCH RECEIVER LOAD RATING LABEL

A permanently engraved label is to be provided, adjacent to the receiver, with Load Rating information, for maximum pull-rating and maximum lift rating, OF THE RECEIVER.

FRONT BUMPER WINCH RECEIVER

A Class-3 tubular hitch receiver assembly shall be furnished, located centerline underside of the front bumper. The receiver shall be "straight-line" pull rated for up to 9000 lb. with a vertical lift capacity of 2000-lb. Receiver location and design shall allow for quick installation of a portable C-III hitch mounted 12-volt powered winch.

ELECTRIC WINCH RECEPTACLE

The front receiver position shall be provided with a heavy duty 12-volt quick disconnect flat style (winch matching) power receptacle. Receptacle to be furnished with snap-on vinyl protective cover, and loom encased insulated multi-stranded copper battery cable which is wired directly to chassis batteries.

REAR TAILBOARD WINCH RECEIVER

A Class-3 tubular hitch receiver assembly shall be furnished, located centerline underside of the rear tailboard/platform. The tubular apparatus body sub frame shall be designed and reinforced to provide support for the winch receiver. The receiver shall be "straight-line" pull rated for up to 9000 lb. with a vertical lift capacity of 2000-lb. Receiver location and design shall allow for quick installation of a portable C-III hitch mounted 12-volt powered winch. Hitch shall be provided with loops, on each side, for trailer tongue safety chain.

ELECTRIC WINCH RECEPTACLE

The rear receiver position shall be provided with a heavy duty 12-volt quick disconnect flat style (winch matching) power receptacle. Receptacle to be furnished with snap-on vinyl protective cover, and loom encased insulated multi-stranded copper battery cable which is wired directly to chassis batteries.

TRAILER BRAKE AND LIGHTING RECEPTACLE

A weatherproof trailer connector shall be furnished, wired to vehicle's brake-stop, tail, and turn circuits.

FILTERED COMPARTMENT VENTING

Back walls of all apparatus body side compartments are to be equipped with vented pass-through openings to the body under side. Vent openings, mesh filter media, and removable grille must allow for dust and moisture free ventilation of the compartment interiors, without reduction of the interior compartment depth.

APPARATUS BODY SIDE COMPARTMENT CONFIGURATION:

A precision machined and fabricated fire apparatus compartmented body is to be furnished, designed to be located immediately rearward of the specified chassis cab.

The body configuration is to include fully enclosed and weather sealed compartmentation on the driver side and the passenger's side of vehicle. In order to provide for maximum depth compartmentation, the wheel well housings are to completely enclose the rear axle suspension components, allowing for the lower portions of the side compartments to extend inboard to the chassis frame depth.

In order to carry the equipment the Fargo Fire Department desires on this apparatus we would like to get 425 cubic feet of storage in the compartments including the coffin compartments on the top of the apparatus. The cubic feet of storage for each compartment shall be stated in the RFP.

Passenger's side compartments are to be provided: two (2) each full-height ahead of, one (1) each upper level above and one (1) each full-height behind the rear wheel well housing.

Driver's side compartments are to be provided: two (2) each full-height ahead of, one (1) each upper level above and one (1) each full-height behind the rear wheel well housing.

COMPARTMENT DOORS AND DOOR ACCESSORIES:

The following specified roll-up style compartment door tracks/extrusions to be "flush" with exterior body panels/door jambs. The doors shall be unpainted satin finish.

All side compartment doors including pump- panel doors shall be roll-up shutter style doors.

Each individual roll-up extruded aluminum door shall be of maximum size for the available door opening.

Two (2) per compartment 12-volt multiple LED element, interior compartment vertical "strip" tubular lights, shall be furnished, one (1) each side of each compartment door opening. Lights to be inboard mounted on the specified door tacks or jambs, activated by "opening" of the respective compartment door, using a magnetic bar latch switch where roll-up doors are provided.

REAR OF BODY

Exterior rear face of body shall be fabricated of smooth stainless steel to allow for application of rear graphics and/or chevrons.

REAR BODY FACE CONSTRUCTION MATERIAL

Exterior rear face of body, including: passenger's side rear door jamb, driver's side rear door jamb, and rear top header (below hosebed) shall be fabricated of type 304 smooth plate stainless steel, to allow for application of reflective graphics.

COFFIN STYLE STORAGE PODS, LIFT-UP HATCH STYLE LID

One (1) each, modular coffin style storage pod(s) to be furnished, of maximum width, length, and depth, as is allowed by the cavity provided between the specified overhead longitudinal squad panels and extended body corners.

Storage pod(s) to be designed to slip down into the top cavity opening, leaving a void space between pod and squad panels, thus providing a "double-wall" protection of the squad panels. Each modular pods is to have a double-broke-flange top perimeter which mates to and interlocks with the cavity top perimeter flanges. Storage pod(s) to be bolted to and easily removable from the cavity flanges. Bottom of storage pod(s) to be provided with a drain port and clear nylon tubing extending to beneath the apparatus body.

Each storage pod is to be provided with a single piece lift-up hatch style lid (cover), with: surrounding perimeter flange, "concealed" full lid length outboard stainless steel piano hinge bolted to pod and lid, single top centerline exterior stainless steel large diameter 1/4-turn D-ring door latch handle with underside rubber gasket, two-point sliding rod latches, door jamb mounted plunger switch to activate the optionally specified interior 12-volt lighting, two (2) pneumatic lift assists/stay-open props, and replaceable full perimeter rubber weather-stripping.

The storage pod(s) are to be fabricated smooth aluminum with a "swirl" machined natural aluminum finish. The hatch lid (cover) is to be fabricated of .187" polished 4-way aluminum tread plate.

RECESSED LIGHT TOWER STOWAGE CAVITY

One (1) transverse recessed well/cavity area shall be furnished in the upper level front portion of the apparatus body, ahead of the specified transverse cavity storage pod. Well/cavity area to be at least 68" wide (front-to-rear) x 78" wide (side-to-side) x 20" deep, designed to accommodate a fully recessed folding/extendible Light Tower. Well/cavity area to be fabricated entirely of polished 4-way aluminum tread plate material, underside barrier coated, perimeter seal caulked, and equipped with bottom floor drains with PVC hoses extending down through the squad side walls and underside compartments, to the underbody area. The floor of light tower cavity shall be reinforced, providing a rigid structure for support of lift-up/extending light tower.

TRANSVERSE FORWARD STORAGE POD

One (1) modular cavity pod shall be furnished, of maximum size, designed to slip down into the cavity opening ahead of the specified longitudinal walkway, rear of the specified light tower cavity. The modular pod shall have a double break fabricated perimeter which interlocks with the squad side panels, body front panel, and walkway front panel top flanges.

A single custom fit pod cover shall be furnished, materials and design as specified above. The underside of storage pod cover shall be provided with two (2) 5" diameter 12-volt surface mounted light fixtures, activated with a door jamb mounted plunger switch.

ALUMINUM PLATE ADJUSTABLE HEIGHT PULL-OUT TRAY(S)

Three (3), each fabricated .190" natural unpainted sanded finish aluminum pull-out pan style tray(s) shall be furnished. Pan tray(s) shall be of maximum width for door opening, and maximum front-to-rear dimension for the designated compartment. Tray(s) are to be provided with 2-1/2" deep perimeter flanges, seam welded at all four corners, and bolted to underside roller mechanism. Each pan tray shall mount to a 500 lb. capacity SlideMaster or equivalent single direction, multi-section, powder-coat painted, 70% extension roller slide assembly.

The pan style tray's underside roller mechanism shall be bolted to and removable from a vertically adjustable slide assembly, allowing infinite adjustment up and down of the roll-out tray within the specified compartment. Vertical slide assembly shall have same 500 lb. rating as the roller assembly. Customer shall designate the tray's initial height above the interior compartment floor level.

Location to be determined at pre-build conference.

ALUMINUM PLATE PULL-OUT TRAY(S)

two (2), each fabricated .190" natural unpainted DA sanded finish aluminum pull-out pan style tray(s) shall be furnished. Pan tray(s) shall be of maximum width for door opening, and maximum front-to-rear dimension for the designated compartment. Tray(s) are to be provided with 2-1/2" deep perimeter flanges, seam welded at all four corners, and bolted to underside roller mechanism. Each pan tray shall mount to a 600 lb. capacity SlideMaster model SM3 or equivalent single direction, multi-section, powder-coat painted, 100% extension roller slide assembly.

Location to be determined at pr- build conference.

ALUMINUM ROLL-OUT/TIP-DOWN TRAY(S)

Four (4), each fabricated smooth natural machine "swirl" finish .190" aluminum roll-out-tip-down pan style tray(s) shall be furnished, located above floor level of specified compartment(s). Roll-out-tip-down Pan tray(s) shall be of maximum width for door opening, and maximum front-to-rear dimension for the designated compartment, with 2-1/2" deep perimeter flanges, bolted to underside 250 lb. capacity SlideMaster SMT or equivalent single direction, "roll-out-and-down", roller slide assemblies. Roller slide assembly is to be provided with side mounted brackets which allow infinite vertical adjustment using standard adjustable shelf tracks.

Location to be determined at pre-build conference.

PULL-OUT TOOL BOARDS

Five (5) each, vertical pull-out .250" aluminum flat panel tool board panels to be furnished. Panels to be at least 60" high x 24" deep (front-to-rear), equipped with top and bottom (2-each) mounted Grant cadmium plated roller slides, spring-loaded retract lock, and full height outboard double broke hand-grasp flange.

Location to be determined at pre-build conference.

TRANSVERSE VERTICALLY ADJUSTABLE HORIZONTAL SHELF, PAN FLANGED

One (1) each, perimeter flanged full compartment front-to-rear width x transverse side-to-side compartment depth fabricated aluminum shelf/shelves shall be furnished, bolted to and removable from adjustable slotted track brackets.

Each shelf is to be fully perimeter flanged, broke-up 2-inches, forming a "pan". Shelf is to be a single piece fabrication, constructed of .190" smooth aluminum with unpainted natural machine sanded finish. Each compartment shelf shall have a load capacity of no less than 600 lbs. and shall include precision machined holes for optionally specified under shelf light fixtures.

Each compartment adjustable shelf shall rest on, and be bolted to angular metal brackets which are compatible with the specified compartment wall mounted slotted tracks.
Location to be determined at pre build conference.

ADJUSTABLE SHELF TRACKS, LOW PROFILE

Eight (8) sets of Laser cut vertically slotted bolt-on "low profile" shelf tracks are to be furnished, mounted two (2) on forward and two (2) on rearward interior side walls of the designated apparatus body side compartments. Tracks are to be designed to accommodate spring-loaded threaded cleats allowing for infinite vertical adjustment of the optionally specified horizontal compartment shelves. NOTE: Cleats are to be provided, only with the optionally specified shelves, four (4) each per shelf.

Shelf tracks are to be fabricated of apparatus body matching material (metal), and their design must allow for the shelving width to match the compartment clear opening width.

BLACK SECTIONAL VINYL FLOOR TILES

Black vinyl Turtle Tile or equal sectional floor tiles shall be provided, floor level of driver's side, passenger's side, and rear compartments.

SLOPING TURTLE TILE RAMPS

The specified Turtle Tile sectional floor tiles shall include leading edge sloped ramps at outboard "sweep-out" riser all compartment door openings.

COMPARTMENT PAN SHELVING: VINYL TILES

Turtle Tile brand or equal black section vinyl tiles shall be furnished, installed on top surface of one (1) interior compartment horizontally adjustable pan style shelves. Tiles shall be cut to size and shape of all shelves, friction fit to perimeter flanges.

ROLL-OUT TRAYS LINED WITH VINYL TILES

Turtle Tile brand or equal, black section vinyl tiles shall be furnished, installed on top floor surface of eight (8) interior compartment rollout trays. Tiles shall be cut to size and shape of all trays.

EXTRUDED ALUMINUM RUBRAIL

Bottom edge of side compartments, ahead of and behind rear wheel cut-out, to be lined with bright aluminum extruded rub rail material. Rub rails shall be located immediately below the sweep-out bottom door threshold, extending from front to rear of body, equipped with eight (8) machine tapered, replaceable poly end plates. Rub rails are to be channel shaped with flanges outboard, be spaced away from body with non-metallic shims, to allow for wash-out and adsorption of minor impacts without damage to body flange.

Rub rails shall be bolted in position, easily replaceable.

BODY FENDER MOLDINGS

Polished extruded aluminum 25" radius wheel well moldings shall be furnished, bolted in position surrounding driver's side and passenger's side rear body "radius" wheel well cut-outs. Wheel well molding fasteners shall be concealed beneath the extrusion. NOTE: The profile of these moldings will allow the apparatus body to remain within the legal overall width as required by Federal D.O.T. vehicle standards, furthermore; wheel well moldings will not extend beyond the purchaser specified rub rails.

TUBULAR HANDRAILS

Apparatus body tubular railings shall be furnished, consisting of: 1-1/4" o.d. extruded aluminum tubing, chrome plated double bolt type 3" stand-off end type and center rail brackets, and neoprene rubber surface mounting gaskets furnished between rail bracket and painted body surface.

Tubular railings at step areas shall be provided with an aggressive machined "knurled" non-slip exterior surface.

Tubular railings shall be provided: passenger's side and driver's side vertical rear beavertails or outboard compartment corners. Handrails shall begin at 18" above tailboard, extending full height of body corners/beavertails.

HORIZONTAL REAR HANDRAIL

Matching material tubular railing shall be provided: horizontally full width of hose body, on rear body vertical panel below hosebed gratings.

DRIVER SIDE 3-BOTTLE STORAGE COMPARTMENT(S)

One (1) triangular shaped compartment(s) shall be furnished, located in upper corner(s) of driver's side wheel well to accommodate three (3) SCBA bottles.

Air bottle compartment shall be equipped with a single weather stripped vertically hinged over-lapping "beveled-edge" door constructed of stainless steel, with wheel well matching finish, equipped with: full height polished stainless steel piano hinge, chain door-stop, and a single chrome plated push-button trigger-latch.

Bottle storage compartment door shall be equipped with proximity switch to activate DO NOT MOVE VEHICLE LIGHT, and notify driver of an open door condition.

PASSENGER SIDE 3-BOTTLE STORAGE COMPARTMENT(S)

Two (2) triangular shaped compartment(s) shall be furnished, located in upper corner(s) of passenger's side wheel well to accommodate three (3) SCBA bottles.

Air bottle compartment shall be equipped with a single weather stripped vertically hinged over-lapping "beveled-edge" door constructed of stainless steel, with wheel well matching finish, equipped with: full height polished stainless steel piano hinge, chain door-stop, and a single chrome plated push-button trigger-latch.

Bottle storage compartment door shall be equipped with proximity switch to activate DO NOT MOVE VEHICLE LIGHT, and notify driver of an open door condition.

LADDERS

The builder shall design the apparatus to carry the following ladder to be supplied by the Fargo Fire Department. Ladders shall be accessible from the ground.

- One (1) 24 ft. extension ladder Duo Safety model # 900-A
- One (1) 14 ft. roof ladder Duo Safety model # 775-A
- One (1) 10 ft. folding attic ladder Duo-Safety model # 585-A
- One (1) 6 ft. fiberglass step ladder Louisville model # FS 1506

PIKE POLES

The builder shall design the apparatus to carry the following pike poles that are accessible from the ground.

- Three (3) 6 ft. I beam style fiberglass handled pike poles
- Two (2) 8 ft. I beam style fiberglass handled pike poles

REAR ACCESS LADDER, ZICO ALUMINUM

A Zico heavy-walled aluminum "QUIC-LADDER" swing-out and down tubular access ladder to be furnished and installed on vertical surface of the passenger side rear body corner fabrication. Rear lighting arrangement may be compromised by the required position of the ladder steps. Ladder to include left and right side vertical black non slip handrails and cast aluminum flat nonskid rung steps. A two rung fold-down section and a pullout locking handle to be furnished.

STAIRWAY LADDER "UNFOLDED" INDICATOR LIGHT

A "STAIRWAY LADDER UNFOLDED" hazard warning indicator light shall be furnished, installed on cab dashboard, and wired to the drop-down/folding ladder lower rung section, so as to indicate unsafe/unfolded road hazard condition. Indicator light to be minimum 1/8" diameter LED, visible to driver and officer, identified with permanent engraved nameplate to read; "**STAIRWAY LADDER UNFOLDED**".

ILLUMINATION OF HAZARD WARNING LIGHT(S)

The above specified Hazard Warning Light(s) shall illuminate only when the park brake has been released, so as to alert driver of pending hazard. Warning light(s) shall remain off with vehicle parked; "on scene".

LED LIGHT STRIPS UNDERSIDE ALUMINUM HOSEBED COVERS

Four (4) 12-volt multiple LED element, "underside" metal hosebed cover horizontally mounted "strip" tubular lights, shall be furnished. Light strips are to be positioned, one (1) at each front and back top corner of the folded-open hosebed covers. Light strips shall be activated by a single pump operator's panel mounted illuminated rocker switch.

LED LIGHT STRIPS UNDERSIDE POD COVERS

One (1) each, 12-volt multiple LED element tubular light strips, are to be furnished, mounted one (1) per cavity pod, underside the hinged metal pod covers. Light strips are to be positioned to illuminate interior pod cavity, with the hinged cover in full-open position. Light strips are to be activated by opening of respective pod cover.

Breathable Air System

Shall be a 6000 PSI CASCADE SYSTEM.

AIR STORAGE BOTTLES

Four (4) 6000 PSI DOT 509 cu. ft. air storage tanks shall be furnished. Air Bottles are to be approved by DOT/IO/UN for Breathing Air Storage.

Air purity in tanks shall meet or exceed the standard of the Compressed Gas Association Specifications G-7.1 for Grade "E" Breathing Air. All tubing shall meet NFPA, SAE, JIC and ANSI standards. All valves shall meet the applicable National Codes such as those of DOT and CGA. All major components and accessories are to be clearly identified with permanently affixed nameplates stating the make, model, and serial number. Appropriate tags and warning labels shall be affixed where necessary for safety and ease in the operation and adjustment of the valves, switches, and controls.

A placard is to be affixed in the vicinity of the cascade control panel indicating the date of the required hydrostatic test of the DOT cylinders.

CASCADE FILL PANEL

All gauges shall read 7500 PSI. All high pressure tubing, hoses, and valves shall be rated at 6000 PSI working pressure with a 4:1 safety factor. All metal stainless steel tubing shall be fully annealed and suitable for bending, clamped every 36" or less to prevent chafing.

A custom built fill station instrument panel shall be provided, to include the following:

1. Seven (7), liquid filled 2-1/2", 0-7500 PSI gauges, one (1) for each of the four (4) 6000 PSI air banks one (1) for adjustable regulator, one (1) for supply pressure, and one (1) for filled SCBA bottle pressure.

2. Five (5) control valves shall be furnished, one (1) for each of the four (4) 6000 PSI air banks, and one (1) for SCBA bottle fill.
3. One (1), adjustable pressure regulator shall be furnished 6000 PSI in/50-6000 PSI out.
4. One (1), Pioneer 3000 male connector with bleed valve and mating female connector shall be furnished on face of panel, with dust cap, for refilling cascade cylinders.

LOCATION(S) CASCADE FILL PANEL

Above specified cascade fill panel shall be located in the rear compartment on the passenger's side of the apparatus.

AIR STORAGE BOTTLE LOCATIONS

The four (4) specified air storage bottles shall be installed in void area of rear body corners. Bottles shall be installed standing vertically, rigidly restrained within heavy steel base and collar brackets, and accessible by removable rear compartment bulkhead.

Apparatus body shall be sufficiently reinforced to accommodate load of bottles.

SPACE SAVER CONTAINMENT SYSTEM - 2 BOTTLES

A dual bottle containment system shall be furnished, manufactured by Resolve Specialty Products, LLC. Fill enclosure shall be designed for mobile applications and incorporated into the fire apparatus body. Fill station shall be totally enclosed and constructed of .1875" steel plate, designed to contain SCBA cylinder in the event of rupture.

Fill station shall be installed in a manner that allows air to exhaust through bottom of enclosure.

The loading position from the compartment floor to the bottle connector shall be 14.25" in the lower holder and 22.60" in the upper holder. The maximum length of SCBA bottle with the valve and fill adapter shall be 29 inches in the lower holder and 27 inches in the upper holder. The fill station door shall be constructed of .25" stainless steel.

Each fill position shall be lined with a plastic material to protect each SCBA or SCUBA cylinder from abrasion.

To ensure operator protection, automatic safety interlocks that prevent SCBA or SCUBA cylinder filling until the door is completely closed shall be provided and located within the enclosure.

A bottom rubber seal shall be provided to seal out road dirt.

LOCATIONS OF CONTAINMENT SYSTEMS

Above specified dual (2) bottle containment systems shall be located in the rear compartment on the passenger's side of the apparatus.

TRAFFIC VESTS

Six (6), traffic vest(s) to be furnished, one for each seating position. Vest(s) to comply with ANSI/ISEA 207 and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front.

ILLUMINATED WARNING DEVICES

Five (5) illuminated warning devices such as highway flares to be furnished with unit.

FOLDING TRAFFIC CONES

One (1) Set of five (5) 28 inch spring loaded traffic cones with storage tote shall be provided and mounted in a customer approved location.

DEFIBRILLATOR

One (1) each lifepack 1000 Defibrillator shall be provided and mounted in passenger area.

ELECTRICAL - 12 VOLT

System shall be 12 volt, negative ground.

WIRING HARNESSES

All apparatus body and pump compartment wiring for specified lights and electrical equipment shall be suitably protected inside heat resistant vinyl, forming multiple harnesses. Multiple harnesses to run from chassis cab, pump compartment, and apparatus body to a PDC (power distribution center). Harnesses shall consist of individual legend imprinted multi-stranded copper color coded SAE-J 1128 compliant automotive wires inside vinyl loom. Spare wires shall run throughout apparatus compartmented body and pump compartment, so as to allow future installations of electrical accessories, using original harnesses. All wiring to be identified and imprinted with number and function. Auto-reset circuit breakers to be furnished, of various amperage capacity, sized for intended load.

All 12-volt switches, relays, terminals, connectors, and wiring to have a direct current rating of 125% of maximum current for which the current is protected. All wiring terminals to be machine crimped, pull-tested during assembly.

APPARATUS LIGHTING INSTALLATION STANDARDS:

All specified 12-volt to be in accordance with D.O.T. regulations at time of purchase.

WALKWAY, STANDING PLATFORM, AND WORK AREA LIGHTING

Specified standing, stepping, and walking surface lighting shall be located to minimize accidental breakage.

LIGHTING INSTALLATION REQUIREMENTS

All specified light fixtures to be located/fitted prior to and re-installed after finish painting. Where fixture wiring passes through metal body panel, the pass-thru hole to be equipped with a rubber grommet. All specified light fixtures shall be installed, using stainless steel screws with non-metallic "replaceable" threaded inserts, to allow removal of light fixture, from exterior of body. Where light fixtures are to be installed on a painted panel, all light fixture mounting holes, grommet holes, and fastener holes shall be machined/cut-out prior to prime and finish painting, so that all metal edge surfaces receive the same protective coating. Where holes are cut or drilled, after finish painting, same holes shall receive paint finishes prior to insertion of fasteners and threaded inserts.

REAR STEP LIGHTS, SHIELDED

Two (2), 2" round chrome plated surface mount 12-volt "shielded" step lights to be furnished, located to illuminate tailboard step surface at the rear of the body. Lens to be 1-1/2" diameter, clear. Lights to be activated by parking brake set.

REAR MARKER

Five (5), rectangular surface mount multiple element LED marker lights with reflective red lenses are to be furnished, located: two (2) recessed into specified rear tailboard corners and three (3) recessed behind center rear tailboard flange diamond shape cut outs. Marker lights to be activated by headlamp switch.

The three (3) marker lights located at the rear to be:

- As close as is practical to the vertical Centerline.
- Centers spaced not less than six (6) inches or more than twelve (12) inches apart.
- All at the same height.

The two (2) outside marker lights located at the rear shall be installed:

- To indicate the overall width of the vehicle.
- At the same height.
- To be visible from both the rear and the side.

MID-TURN/MARKERS

Two (2), round or rectangular surface mount mid-ship dual element, combination marker & turn lights, are to be furnished, located: one (1) driver's side mid-ship vehicle and one (1) passenger's side midship vehicle. Light fixtures are to have Amber lens. Marker Light is to be steady on with headlights, Turn Lights are to have flashing element, activated by vehicle turn signals.

The two (2) outside Marker/Turn lights are to be visible in rear view mirrors.

STOP/TAIL LIGHTS

Two (2), Whelen model 60ROOBRR, Red element 5" x 8" rectangular surface mount LED combination stop/tail lights to be furnished, mounted each side at rear of body. Lights to be wired for activation by service brake and headlamp switch.

REAR TURN SIGNALS

Two (2), Whelen model 60A00TAR, Amber element 5" x 8" rectangular surface mount LED turn signal lights with populated arrow shape and multiple flash patterns to be furnished, mounted one each side at rear of body. Lights to be wired for activation by left or right turn signal (not by brake lights).

BACK-UP LIGHTS

Two (2), Whelen 60C00VCR, Clear element rectangular surface mount LED back up lights to be furnished, mounted one each side at rear of body. Lights to be wired for activation by reverse gear of truck transmission.

Above specified lights to include appropriate "chrome plated" 6EFLANGE(s) and be bolted in position, evenly spaced, driver's side and passenger's side rear body corners.

DO NOT MOVE APPARATUS "HAZARD" INDICATOR LIGHT

The forward overhead headliner mounted flashing hazard warning indicator light, as is specified in the Chassis Section and per current NFPA requirements, shall be illuminated automatically, as listed below:

The light shall be labeled "**DO NOT MOVE APPARATUS IF LIGHT IS ON**".

DEVICES WHICH ACTIVATE THE "DO NOT MOVE APPARATUS" INDICATORS

Opened chassis cab doors and/or open apparatus body exterior compartment doors, are to activate/illuminate the above specified "DO NOT MOVE APPARATUS" warning indicator light located on the forward overhead headliner, and the specified audible alarm.

PERIMETER UNDERBODY LIGHTS

Five (5) each, 4" LED grommet mount under body 12-volt ground lights to be furnished, located: two (2) each driver's side ahead of and behind rear wheels, two (2) each passenger's side ahead of and behind rear wheels, one (1) each center rear underside tailboard. Lights to be completely sealed for weather resistance, lenses 4" diameter. Lights to be wired for activation by setting of the parking brake.

CAB ROOF LIGHTBAR: WHELEN FREEDOM 82" POPULATED, WITH OPTICOM

One (1ea), Whelen "Freedom" 82" long FN**LED light bar shall be furnished and installed, permanently mounted to forward roof top of chassis cab.

Light bar shall be provided with:

- Two (2) red LED's, located: forward facing
- Two (2) clear LED's, located: 2-forward facing
- Two (2) red front corner LED's
- Two (2) red rear corner LED's
- Two (2) MR11 LED Alley Lights facing the driver and passenger side
- One (1) LED traffic light controller with National standard

NOTE: Activation of vehicle's Parking Brake shall disengage any forward facing clear lights.

TRAFFIC EXEMPTION:

One (1) 3M Opticom Emitter shall be furnished, installed inside the light bar, center position.

TRAFFIC DIRECTING LIGHT BAR - REAR OF BODY

One (1), Whelen model TAL65 Traffic Directing 36" wide light bar with six (6) Amber LED lamps and one (1) TACTRL1 control head is to be furnished. The light bar is to be surface mounted at center rear of body, as high as possible. Control head is to be installed inside driver's compartment, location as designated by Customer at pre build conference.

REAR BODY TRAFFIC DIRECTING LIGHTBAR GUARD

A fabricated stainless steel angular guard is to be provided at the rear of body, full width of and same depth as the traffic directing light bar. The specified rear body mounted traffic light bar is to be surface mounted to the rear face of body, beneath the fabricated guard so as to protect the light bar and lenses.

SIDE LOWER ZONE, REAR WHEEL WELL, LED

Four (4), Whelen 60R02FRR surface mount Red Super LED flashing lights with chrome trim flanges to be furnished, two (2) on each side of the apparatus in the front and rear portions of the rear wheel wells. Lights are to meet the NFPA Zone B & D lower level lighting requirement. Lights to be activated by an illuminated rocker switch.

REAR OF BODY LOWER LEVEL LED WARNING LIGHTS

Two (2), Whelen model 60R02FRR, 6" x 4" rectangular surface mounted LED light heads and two (2) 6EFLANGE chrome plated surrounds to be furnished, located one (1) driver's side lower rear body corner, one (1) passenger's side lower rear body corner. Light lenses to be driver's side Red, passenger's side Red. Lights to be activated by specified switch, identified by function.

REAR SIDE AND REAR UPPER LEVEL LED "STACKED" LIGHTS

Two (2), Whelen model 60R02FRR, 6" x 4" rectangular surface mounted LED light heads and two (2) 6EFLANGE chrome plated surrounds to be furnished and mounted two (2) rear upper sides (1-each side). Light lenses to be driver's side Red, passenger's side Red.

Four (4), Whelen 500 series TIR6 Super LED rectangular surface mounted light heads to be furnished two (2) driver's side rear and two (2) passenger's side rear "stacked" one above the other. Light lenses to be driver's side Red, passenger's side Red.

All six (6) lights to be activated by specified switch, identified by function.

PAINT COLOR

Finish top coat paint color shall be of a single "job color" to match major chassis cab exterior color. The body shall match existing Fargo Fire Department apparatus, Unless otherwise specified, the chassis frame, axles, and suspension shall remain the OEM color of Black.

COMPARTMENT INTERIOR FINISH

The interior compartments shall remain the natural #4 "brushed" stainless steel finish, as previously specified. All natural finish surfaces shall remain protective vinyl covered throughout the manufacturing process.

DISSIMILAR METALS

During assembly all 4-way aluminum tread plate components, shall be seal coated where mated to non-aluminum components. 4-way aluminum fabrications to be installed using stainless steel button socket head cap screw fasteners. Edges of 4-way aluminum, where meeting exterior body painted fabrications, shall be properly caulked with G.E. or equal silver metallic body sealant to prevent moisture accumulation between metal layers.

TOUCH-UP PAINT

One (1), full quart of original finish color top coat paint material shall be provided for use as future touch-up paint.

TECTYL NON-HARDENING UNDERCOATING

After final body reassembly, under body areas shall be spray coated with Tectyl or equal rust proofing undercoating material. Vehicle exterior painted surfaces shall be PrepSol "solvent washed" after undercoating, to remove all overspray residues.

REFLECTIVE STRIPING

Three (3) reflective stripes shall be provided across the front of the vehicle and along the sides of the body. The reflective band shall consist of a 1" white stripe at the top with a 1" gap then a 4" white stripe with a 1" gap and a 1" white stripe on the bottom. Where Chevrons are not specified, a matching color 4" band shall be provided at the rear of the apparatus.

The reflective band provided on the cab face shall be below the front grille on the front bumper.

"Z" JOG IN REFLECTIVE STRIPE

There shall be a "Z-shaped" jog in the reflective stripe design. Jog shall be located in the mid-section of the apparatus body, uninterrupted by wheel well cut-out and/or pump control panel.

GOLD LETTERING, BLACK SHADED

Driver's side and passenger's side chassis cab front doors shall be furnished with CAD generated machine cut simulated Gold Leaf lettering, suitably shaded with Black vinyl.

Forty-one (41) to sixty (60) CAD generated machine cut simulated gold leaf letters, 3.00" tall, highlighted with black vinyl shading shall be provided.

Lettering to be encapsulated between two (2) layers of Mylar, for protection and longevity.

LETTERING DESIGN

The Fargo Fire Department will provide the builder with a picture of the lettering desired at the pre build conference.

CHEVRON STRIPING, REAR OF APPARATUS, NFPA COMPLIANT

A minimum of 48 square feet of 6" multiple diagonal reflective stripes shall be provided, full width at rear of apparatus body. Stripes shall form "Chevrons", using alternating red and yellow reflective stripes, only interrupted by the rear apparatus lighting, handrails, steps, and door hardware. Chevron pattern shall be applied to flat metal surface, prior to installation of the above specified bolt-on (removable) accessories.

LINE VOLTAGE SYSTEM

120V/240V ELECTRICAL SYSTEM AND ACCESSORIES

The following specified 120/240 volt alternating current system shall meet the requirements of NFPA 1901, as it relates to vehicle mounted systems, including but not limited to: Materials, Grounding, Over-current Protection, Wiring Methods, Wiring identification, Wet Locations, Dry Locations, Receptacle Listings, Electrical System Testing, Placarding, and Operational Testing.

120/240 VOLT HYDRAULIC GENERATOR SET - HARRISON 20KW MODEL 20.0 MPC-16D

The generator system shall be a Harrison model 20.0 MPC rated at 20 kilowatts, 166 amps @ 120VAC and 83 amps @ 240 VAC, 1 Phase, 60 Hertz, or approved equal.

The motor/generator shall be placed in a tray frame assembly which affords protection to the components and provides a unitized mounting module containing motor/generator, reservoir, oil cooler, and filtration system. The generator shall be a commercial type. The reservoir shall include an oil level gauge, fill cap, and fill strainer.

The system must be capable of producing the rated full-load power when driven from the vehicle PTO from high idle to maximum engine speed.

The system shall be 24" long, 29" wide, and 19" high, weighing no more than 488 lbs.

The system shall include a digital meter package that includes frequency, a voltage, and the two amperages. The system shall also indicate/have: generator run hours, over current indication, over temperature indication, and "power-on" indication.

A Chelsea "Hot Shift" 10-bolt transmission power take-off shall be of the heavy duty type, mounted directly on the transmission of the chassis. The driveline shall be hollow tube type, with heavy duty universals and splined shaft for movement between the chassis components and the generator. The engagement of the power take off shall be in the chassis cab with rocker switch and pilot light labeled **GENERATOR PTO ENGAGED** to note engagement of the power take off. An engraved nameplate indicating the chassis transmission shift selector position to be used for generator operation shall be provided in the cab, located so that it can easily be read from the driver's position. A switch shall be furnished, separate of the PTO switch, to energize the generator. This will allow the PTO to be "constant on" to allow the fluid to warm before cold weather operations.

A power source specification label shall be permanently attached to the apparatus near the operator's panel. The label shall provide the operator with the following information: rated voltage and type (AC/DC), phase, rated frequency, rated amperage, continuous rated watts, power source and engine speed.

HARRISON INTEGRATED HYDRAULIC TECHNOLOGY

A Harrison Integrated Hydraulic Technology system is to be provided for use with the specified Harrison Generator as well as the specified accessory hydraulic system.

The system shall incorporate a transmission mounted power take off coupled with an axial piston pump capable of supplying all required flows and pressures required for the system. Gear pumps shall not be allowed.

The system shall incorporate a dynamic custom designed hydraulic manifold that will route the fluid under pressure to the required component systems as selected by the apparatus operator.

The system shall include integrated electronic switch controls located as needed and determined by the purchaser.

The system shall be fully operable with the vehicle in motion (forward and reverse) or at a stop with parking brake applied.

There shall be a "Master Hydraulic" power switch located on the cab dash switch panel at the driver's position. When activated, this switch will engage the transmission mounted PTO for the hydraulic pump, the hydraulic fluid heat exchanger fan, and indicate "Hydraulic Power Ready" for the available components.

Control switches for activating hydraulic power to the other vehicle components shall be located in a common switch panel immediately next to or inclusive with the Master Hydraulic switch panel. Remote switch locations for the other vehicle components can be located elsewhere on the apparatus as needed. By using the switches, the operator can direct the integrated hydraulic system to power or shut off the required components as needed.

All hydraulic filters utilized shall be fully accessible and removable from the top of the reservoir, no exceptions.

The drain line for the hydraulic fluid reservoir shall be fitted with a stainless steel ball valve, sealed in the closed position with a cable tie to prevent accidental opening. Drain lines shall be routed to the bottom of the apparatus for easy removal of hydraulic oil. The drain lines shall be fitted with a sealing plug to keep out contaminants and road debris.

GENERATOR LOCATION, OVERHEAD BODY IN RECESSED DUNNAGE

The above specified hydraulic generator shall be mounted within an open dunnage area located above the driver side forward full height compartment, outboard of the water tank, with allowances made for proper venting.

Floor drain is to be provided, with drain hose extending to below the apparatus body.

GENERATOR CIRCUIT BREAKER PANEL

One (1), Square-D 100-amp, 32 place circuit breaker panel with appropriately sized main breaker and individual switch type manual-reset load suitable circuit breakers to be furnished, for single phase generators up to 25,000 watts. Panel to be located inside a weatherproof apparatus body compartment (Customer approved location), provided with waterproof non-metallic flexible conduit (extending from generator to circuit breaker panel and circuit panel to electrical accessories), with appropriate size multi-

stranded color coded THHN insulated wiring. All circuits shall be identified with nameplates describing controlled function.

RECESSED LINE VOLTAGE SCENE LIGHTS, 240 VOLT, 1500 WATT

Six (6) Fire Research "Optimum" model OPA250-M15 1500W/240-volt 4" deep-recessed quartz floodlight(s) to be furnished complete with tilt-down optics. Light(s) to be wired and powered by generator load center mounted 12-volt/240-volt relays with remote illuminated, 12-volt rocker switches. Light(s) relay switch to be mounted: circuit breaker box identified as: "side" and "rear floodlights

240V RECESSED LIGHT LOCATION(S)

The above specified 240V Recessed light(s) shall be located, two (2) on the driver's side of the body as high and forward and back as possible: two (2) on the passenger's side of the body as high and forward and back as possible, and two (2) on the back of the body as high and out to each side as possible. These lights shall be able to be turned on and off from both the emergency light control panel in the cab and from the pump operator's panel. The lights shall be turned on in the pairs as stated above.

POWER REWIND ELECTRIC CORD REEL(S) **LINE VOLTAGE ELECTRIC CORD REEL(S), 120-VOLTS AC**

Two (2) each, Hannay model ECR1614-17-18 or equivalent, 12-volt electric chain and sprocket rewind "live-wire" 120VAC electric 3-conductor cord reel(s) shall be furnished, painted with oven-cured enamel standard silver metallic color. Cord reel(s) shall be equipped with a placarded weatherproof push-button 12-volt rewind switch located within easy reach of the operator while standing on the ground outside the vehicle.

POWER FEED LINE AND CORD/CABLE

A voltage & amperage matching capacity insulated and conduit protected multi-stranded copper power feed line shall extend from the reel's junction box to the specified circuit breaker panel. Cord reel shall receive its own dedicated manual-reset circuit breaker, of specified capacity.

Each reel shall be provided with a single 150 ft. section of 12/3 S.O. insulated multi-stranded copper electric cord. The electric cord shall be mechanically clamped at and connected to the reel drum power leads, and provided with an opposite end cord mounted bright orange nylon ball stop.

CORD ROLLERS

Each electric cord reel shall be equipped with a "captive" 4-way cord roller assembly, angled towards the ground level, for ease of cord deployment and rewinding. The roller assembly shall be of same or slightly narrower width as reel drum, in order to prevent cord from crawling over the reel discs while being deployed and rewound.

GFE RECEPTACLE BOX, HARDWIRED

Two (2)each, Circle-D model PF51G-1 "lighted" electrical receptacle box to be furnished, mounted on end of specified reel cord(s), each box equipped with: four (4) individual receptacles: 5-20R "household" female 20-amp/125-volt 3-wire 2-pole receptacles, cord clamp, spring loaded receptacle covers, and signal light (to indicate power on).

Junction box holder(s) shall be furnished, located adjacent to reel roller assembly, or as customer designated.

CORD REEL LOCATION: FLOOR LEVEL BACK OF DRIVER COMPARTMENT(S)

One (1) of the specified electric cord reel(s) shall be enclosed inside the driver side compartment(s). Electric cord shall "deploy" straight outboard away from the apparatus.

CORD REEL LOCATION: FLOOR LEVEL OF PASSENGER COMPARTMENT(S)

One (1) of the specified electric cord reel(s) shall be enclosed inside the passenger side compartment(s). Electric cord shall "deploy" straight outboard away from the apparatus.

AIR REEL

One (1) Hannay air hose reel or equivalent with 12-volt electric chain and sprocket rewind shall be furnished, painted with oven-cured enamel standard silver metallic color. Air reel shall be equipped with a placarded weatherproof push-button 12-volt rewind switch located within easy reach of the operator while standing on the ground outside the vehicle. The air hose reel shall be plumbed to the apparatus air system and be able to be deployed on the passenger side of the apparatus.

The reel shall be provided with a single 150 ft. section of air line with female connection on the end.

HOSE ROLLERS

The air hose reel shall be equipped with a "captive" 4-way cord roller assembly, angled towards the ground level, for ease of cord deployment and rewinding. The roller assembly shall be of same or slightly narrower width as reel drum, in order to prevent hose from crawling over the reel discs while being deployed and rewound.

125-VOLT 5-20R LINE VOLTAGE RECEPTACLES

Five (5), duplex 5-20R (household), 125-volt, 20-amp, 3-wire plug-in receptacle(s), to be furnished. Receptacle(s) are to be recessed into a single gang outlet box and surface mounted to specified location, provided with an appropriate exterior gasket and hinged cap or stainless steel duplex cover plate.

BODY LINE VOLTAGE RECEPTACLE LOCATION(S)

The above specified Body Line Voltage Receptacles shall be located: one (1) each front and rear, driver's and passenger's side body corners and one (1) in the front bumper extension.

LIGHT TOWER

A Command Light Knight 2, part number KL475, light tower shall be provided for installation on the apparatus. The location of the light tower and its controls shall be installed according to instructions given by the customer and the requirements of the light tower manufacturer.

LOCATION: LIGHT TOWER AND CONTROLS

Above specified light tower shall be mounted on the forward portion of the body on top of the truck, and the controls for this tower shall be mounted in the compartment with the SCBA fill station.

12 VOLT WINCH

The apparatus manufacture shall supply a 12volt winch with the apparatus. The winch shall be wired to comply with NFPA 1901 and be mounted on a base to allow it to be inserted and operated in the 4 winch receiver positions. The winch shall be as large as possible for the load limits of the apparatus.

FINAL DELIVERY AND DEMONSTRATION

Final delivery of the completed vehicle shall be made via drive-away F.O.B. Fire Department Headquarters, at which time purchaser's designated Fire Department and/or community personnel shall be instructed as to the proper use and maintenance of the apparatus by the Manufacturer's Factory Representative. Apparatus demonstration shall include fire pump operational instructions, along with additional instructions as to proper operation and maintenance of supporting systems which have been provided and installed by the manufacturer.

EQUIPMENT OPTIONS

Due to the possible price breaks on equipment the Fargo Fire Department would like each option of equipment priced out separately. All or none of the equipment options may be purchased with the apparatus. These options do not include the equipment that was specified in the apparatus RFP.

OPTION # 1

Option #1 is for the majority of the loose equipment to be carried on the apparatus. If a model number is listed it is to be a specific part wanted, if no model number is listed any manufacture's item will due.

- 1 4' D-Handled pick pole, I beam style, fiberglass handle.
- 1 4' D-Handled dry wall hook, I beam style, fiberglass handle.
- 1 6' Multipurpose hook (New York style) with ram knob, I-Beam style fiberglass handle
- 2 6' pike poles, I-beam style, fiberglass handle.
- 2 8' pike poles I beam style fiberglass handles
- 1 18" Leader positive pressure gas driven fan model # MT236 power by a Honda motor
- 1 12 lb. flat Maul with fiberglass handle and mounting brackets
- 1 6 lb. Pick headed axe with fiberglass handle and mounting brackets
- 2 6 lb. flat headed axes with fiberglass handle and mounting brackets
- 1 TNT tool 6.5 lb. 35" handle and mounting brackets
- 1 51" pinch point pry bar and mounting brackets
- 1 36" Halligan tools and mounting brackets
- 1 Glassmaster windshield saw
- 2 Akron 1 ½" turbojet nozzles with pistol grip model #1763
- 1 Akron quick attack foam tube to fit on above nozzle
- 2 Akron 1 ½" shut-off with pistol grip model #2127
- 2 Akron 15/16 tip model # 1417
- 2 Akron 2 ½" turbojet nozzles with pistol grip model #1733
- 1 Akron 2 ½" hose jacket model # 772
- 2 Akron 2 ½" shut-offs with pistol grip and triple stacked tips
- 1 Akron 2 ½" double male
- 2 Akron 2 ½" double female
- 2 Akron 2 ½" to 1 ½" reducers
- 2 1 ½" hose caps
- 1 Akron 2 ½" Siamese model # 1262
- 2 Akron 2 ½" x 1 ½" x 1 ½" gated wyes Model # 2580
- 1 Akron 2 ½" ball gate valve
- 1 Akron 90 degree hose roller model # 583
- 1 Akron 2 ½" hose clamp with mounting brackets model # 588
- 4 Adjustable ratcheting hydrant wrenches, Pentagon style, Darley Co. # J797
- 1 2 ½ gallon pressurized water extinguisher with mounting bracket
- 1 10A 80 BC dry chemical extinguisher with mounting bracket
- 1 10 BC carbon dioxide extinguisher with mounting bracket
- 1 short #2 d-handled square point shovel
- 1 grain type scoop shovel
- 1 long handled #2 round point shovel
- 6 5" Storz spanner wrenches and mounting brackets, Darley Co. AR228 or equivalent
- 10 2 ½" spanner wrenches with door mount holders
- 2 45 degree 5" Storz to hydrant adapter. Hydrant thread will be 4.5" NH
- 4 10 oz. vinyl coated woven polyester salvage covers 12 ft. x 18 ft.
- 3 500 watt portable handheld floodlights
- 1 Cutters Edge chainsaw model # ce2165rs with a 16" bar and depth gauge
- 1 Replacement bullet chain for above chainsaw

1	14" heavy duty bolt cutter		
1	42" heavy duty bolt cutter		
12	50 ft. lengths of 1.75" double jacket all synthetic fire hose. Must have a service pressure at or above 400 psi.		
20	50 Ft. lengths of 3" double jacket all synthetic fire hose. Must have a service pressure at or above 400 psi, red in color.		
28	50 Ft. lengths of 2.5" double jacket all synthetic fire hose. Must have a service pressure at or above 400 psi, yellow in color.		
5	100 ft. lengths of Angus or Red Head 5" synthetic rubber large dia. fire hose with Storz couplings. Must have a service test pressure at or above 250 psi.		
10	2.5" spring loaded quick lock nozzle holders		
4	1.5" spring loaded quick lock nozzle holder		
1	Iron Duck Breathsaver oxygen bag product code 34016D. The color will be green.		
1	Iron Duck pack care triple trauma bag product code 32499AT. The color will be orange.		
1	Laerdal V-Vac™ starter manual suction kit		
1	Allied Healthcare products oxygen regulator model #21025		
1	Masimo SET rad-57 pulse oximeter with carrying case		
1	Husqvarna K 970 rescue saw		
1	Fire hooks unlimited steel/concrete diamond tip saw blade for above saw		
1	Warthog ventilation blade for above saw		
1	Supervac nanopac25 confined space fan with 25' of duct		
1	Smith tag a long acetylene torch kit part # TL-550		
1	Dewalt reciprocating saw model # DW311K		
2	Deluxe Search and Rescue Pack, Red	Rescue Tech	808954
1	1/2"x 150' NFPA static rescue rope - Red		
1	1/2"x 150' NFPA static rescue rope - Blue		
2	Steel large D Carabiner - 1/4 turn	Rescue Tech	6050184
2	Anchor plate - Aluminum	CMC	300610
4	Rescue Rappel Rack - "J" style	Rescue Tech	601124
4	2.5" Prussik minding pulley	CMC	3003001
2	Canvas edge protection pad 30"x36"	Rescue Tech	612105
2	Anchor straps - 7'	CMC	201024
2	Anchor strap pads - 6'	CMC	294034
2	Rescue swivel	CMC	300721
2	Load release strap	CMC	201108
1	540 belay - large	Rescue Tech	2154540
	Gibbs Ascender - 1/2" aluminum spring loaded	Rescue Tech	602012
2	Pick off strap - orange	Rock N Rescue	WPOS
2	Rescue 8 Descender	Rescue Tech	601000N
4	Rescue helmet, Vertex Vent - Yellow	Petzel	2354011042
2	18" rope guard - black	Rescue Tech	6124181
2	Personnel duffel bag - 24" x 14" blue	Rescue Tech	8063156
1	Riggers full body rescue harness - Medium	Rescue Tech	712301
1	Riggers full body rescue harness - Large	Rescue Tech	712401
1	200' roll 8mm prusik cord - Black	Rescue Tech	5098200BKS
1	200' roll 8mm prusik cord - Red mix	Rescue Tech	5098200RD
1	1" x 300' tubular webbing - orange	Rescue Tech	7901OR

1	1" x 300' tubular webbing - red	Rescue Tech	7901RD
1	1" x 300' tubular webbing - blue	Rescue Tech	7901RY
1	1" x 50' tubular webbing - yellow	Rescue Tech	790102-50
1	2" x 150' tubular webbing - blue	Rescue Tech	7902BL
2	Offset "D" style autolock carabineers - black	Rescue Tech	6050174
18	Offset "D" style autolock carabineers - gold	Rescue Tech	6050177
4	Rock and Rescue escape systems	Rock N Rescue	DRESF43
1	Sked basic rescue system	Skedco	SK-200C-OR

OPTION # 2

This option is for the auto extrication equipment for this apparatus. All the Hurst equipment shall have Hurst brand quick connect couplings.

1	Hurst 220 volt tri mode pump model # P640TE-D
1	Hurst hydraulic spreader model # SP 310
1	Hurst hydraulic cutter model # S 700
1	Hurst hydraulic ram model # R 430
1	Paratech highway VSK vehicle stabilization kit part # 22-796852
1	Paratech basic air bag control kit part # 22-890351
3	Paratech inline relief valves part # 22-890490
1	Paratech 1/4" nipple part # 22-890667
1	Paratech 28 X 28 lift bag part # 22-888190
2	Paratech 24 X 24 lift bags part # 22-888170

OPTION # 3

This option is for the thermal imager on the apparatus.

1	Drager UCF 9000 thermal imaging camera
1	Drager UFC 9000 truck mount kit

OPTION # 4

This option is for the air packs and spare bottles on the apparatus.

4	MSA 4500 psi complete airpacks part # B-M7HD12C0C14AAA0
4	MSA 4500 psi extra bottles part # 807570

OPTION # 5

This is for the radio equipment for the apparatus.

1	Motorola Apex 6500 mobile radio
4	Motorola Apex 6000 VHF portable radios
4	Motorola speaker microphones part # NNTN8203AA
4	Motorola vehicular chargers part # NNTN7624B